DEVOTED TO RESEARCH AND CLINICAL STUDY OF THE DISEASES AND PROCESSES OF THE AGED AND AGING

Geriatrics

VOLUME 2 July - August 1947 NUMBER 4

the protein patients accept

'DELCOS'

palatable

easily digested

efficient

Protein-Carbohydrate Granules

Protein therapy is important in all branches of medicine. Every cell of every tissue requires protein for growth and repair. Protein requirements are therefore frequently enormous. • How may protein be administered in large amounts? The simplest and best way is by mouth, for any patient who can swallow. Infusion hazards are avoided; more complete nutrition is provided.* • 'DELCOS' Protein-Carbohydrate Granules present palatable, concentrated, *whole* protein of high biologic value, protected from wasteful use as energy. • Patients like the taste of 'DELCOS' Granules, and will accept it almost ad libitum. Dosage may be pushed to the limit and maintained at a high level indefinitely. Moreover, since 'DELCOS' Granules provide carbohydrate-protected, *whole* protein, containing *strepogenin*,* a factor lacking in protein hydrolysates and mixed amino acids, maximal nutritional efficiency is achieved. Controlled growth tests have shown that 'DELCOS' Granules are biologically superior to beefsteak. • 'DELCOS' Protein-Carbohydrate Granules contain casein and lactalbumin, providing a balanced combination of *all* the essential amino acids, as *whole protein*, protected from wasteful use as energy by carbohydrate (30%). In wide-mouthed jars; 1-lb. and 5-lb. Sharp & Dohme, Philadelphia 1, Pa.

*Editorial: J.A.M.A., *131*:826, July 6, 1946.

GERIATRICS

Official Journal of the American Geriatrics Society

EDITORIAL BOARD

A. E. HEDBACK, M.D., *Editor*

Associate Editors

EDWARD B. ALLEN, M.D., White Plains, New York
LORD AMULREE, M.D., M.R.C.P., London, England
FREMONT A. CHANDLER, M.D., Chicago, Illinois
WILLIAM J. DIECKMAN, M.D., Chicago, Illinois
HAVEN EMERSON, M.D., New York City
JONATHAN FORMAN, M.D., Columbus, Ohio
GEORGE R. HERRMANN, M.D., Galveston, Texas
TREVOR H. HOWELL, M.R.C.P. Ed., Purley, Surrey, England
WINGATE M. JOHNSON, M.D., Winston-Salem, North Carolina
NORMAN JOLLIFFE, M.D., New York City
FOSTER KENNEDY, M.D., New York City
WILLIAM J. KERR, M.D., San Francisco, California
F. L. PHILIP KOCH, M.D., New York City
GEORGE W. KOSMAK, M.D., New York City
CHAUNCEY D. LEAKE, Ph.D., Galveston, Texas
OSWALD SWINNEY LOWSLEY, M.D., New York City
J. A. MYERS, M.D., Minneapolis, Minnesota
HOWARD C. NAFFZIGER, M.D., San Francisco, California
GEORGE E. PFAHLER, M.D., Philadelphia, Pennsylvania
E. A. ROVENSTINE, M.D., New York City
EDWARD A. STRECKER, M.D., Philadelphia, Pennsylvania
EDWIN L. STURDEE, M.D., M.R.C.P., London, England
MALFORD W. THEWLIS, M.D., Wakefield, Rhode Island
WILLARD OWEN THOMPSON, M.D., Chicago, Illinois
E. L. TUOHY, M.D., Duluth, Minnesota
WALTER E. VEST, M.D., Huntington, West Virginia
MAURICE B. VISSCHER, M.D., Minneapolis, Minnesota
S. MARX WHITE, M.D., Minneapolis, Minnesota

30% REDUCTION IN PRICE OF

DIMENFORMON BENZOATE
VIALS and AMPULS

NOW you can obtain "the most efficient"* of all injectable estrogens and their derivatives—alpha-estradiol benzoate available as Dimenformon Benzoate—at a cost as low as that of some of the so-called "bargain estrogens." In fact, the over-all cost of Dimenformon Benzoate therapy is really lower than that of many "bargain estrogens", for its high potency and prolonged action permit fewer injections at longer intervals. Moreover, by using Dimenformon Benzoate vials, you and your patients can enjoy an *additional* savings—as much as 37% *more*—over the cost of individual ampuls. At these new economy prices, none of your patients needs be denied the benefits of Dimenformon Benzoate therapy because of financial limitations.

*E. P. McCullagh, *Cleveland Clin. Quart.*, 13:166, 1946.

ROCHE-ORGANON INC. • NUTLEY 10, N. J.

OR EVEN 59% REDUCTION
By Using Dimenformon Benzoate Vials In Boxes of 6

T.M.—Dimenformon—Reg. U. S. Pat. Off.

ALL THESE SIZES AND STRENGTHS AVAILABLE AT REDUCED PRICES

•

VIALS, 10 cc

0.333 mg (2,000 R.U.) per cc
Boxes of 1
Boxes of 6

2.0 mg (12,000 R.U.) per cc
Boxes of 1
Boxes of 6

•

AMPULS, 1 cc

0.1 mg (600 R.U.)
Boxes of 6
Boxes of 50
Boxes of 100

0.166 mg (1000 R.U.)
Boxes of 6
Boxes of 50
Boxes of 100

0.333 mg (2000 R.U.)
Boxes of 3
Boxes of 6
Boxes of 50
Boxes of 100

1.0 mg (6000 R.U.)
Boxes of 3
Boxes of 6
Boxes of 50
Boxes of 100

1.666 mg (10,000 R.U.)
Boxes of 5
Boxes of 50
Boxes of 100

•

**POTENT
ECONOMICAL
WELL TOLERATED
ESTROGEN**

GERIATRICS

Official Journal of the American Geriatrics Society

VOL. II, NO. 4 — JULY-AUGUST 1947

CONTENTS

Significant Objectives in the Management of Cardiac Failure in Elderly Patients . . . HOWARD M. ODEL, M.D. 197

Preclinical Medicine and Geriatrics . . . MALFORD W. THEWLIS, M.D. AND E. T. GALE, M.D. 205

Nutrition in Cardio-Vascular Disease . . . DON CARLOS PEETE, M.D. 213

Geriatrics Contacts Old Age Assistance . . EDWARD L. TUOHY, M.D. 222

Epilepsy in Old Age . . . . . MADELAINE R. BROWN, M.D. 230

Cancer in the Aged 233

Allergy Problems in Elderly Patients . . . . ABNER M. FUCHS, M.D. 235

Editorial:
Geriatrics Begins at Twenty 247

Correspondence 248

Digests from Current Literature 250

GERIATRICS is published bimonthly at Minneapolis. Publication dates: January, March, May, July, September, November. Subscription rates: $5.00 a year, $1.00 a copy; foreign, $6.00 a year, $1.20 a copy. Louis M. Cohen, Publisher, Ruth E. Branger, Assistant Editor. Maurice Wolff, Business Manager; James H. Callan, Assistant Business Manager. Address all editorial and business correspondence to GERIATRICS, 84 South Tenth Street, Minneapolis 2, Minnesota.

ADVERTISING REPRESENTATIVES. NEW YORK 17: George Doyle, Lee Klemmer, Arthur Young, 1 East 42d Street, Suite 801, Corn Exchange Building. Telephone: Murray Hill 2-8717. CHICAGO 11: Jay H. Herz, Suite 1921, 20 North Wacker Drive. CHICAGO 6, ILL. Telephone: Central 4619. CLEVELAND 14: Bernard A. Smiler, 1125 Fidelity Building. Telephone: Main 3619. SAN FRANCISCO 4: Duncan A. Scott & Co., Mills Building. Telephone: Garfield 1-7950, LOS ANGELES 15: Duncan A. Scott & Co., 408 Pershing Square Building, 448 South Hill Street. Telephone: Michigan 6203.

Copyright 1947 by MODERN MEDICINE PUBLICATIONS.

Title Reg. U.S. Pat. Off. Entered as second-class matter February 14, 1946, at the post office at Minneapolis, Minnesota under the act of March 3, 1879

"During convalescence especially...

*. . . it is essential to carry on complete nutritive therapy."**

The *sick* patient with mixed vitamin deficiencies requires all the essential vitamins in doses of therapeutic magnitude. Any simple multiplication of maintenance dosage is impractical for therapy — because the ratio between the dose for therapy and that for maintenance varies with the individual vitamins.

SQUIBB THERAPEUTIC FORMULA provides these *truly* therapeutic doses.

A single capsule contains:

Vitamin A	25,000 units	5 times	maintenance level recommended by the Food and Nutrition Board of the National Research Council
Vitamin D	1,000 units	1¼ times	
Thiamine HCl	5 mg.	2½ times	
Riboflavin	5 mg.	2 times	
Niacinamide	150 mg.	7½ times	
Ascorbic Acid	150 mg.	2 times	

SQUIBB *Therapeutic Formula*
VITAMIN CAPSULES

*Kruse, H. D.: Proc. Conf. Convalescent Care, N. Y. Acad. Med. 1940, pp. 15-36.

MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858

SIGNIFICANT OBJECTIVES IN THE MANAGEMENT OF CARDIAC FAILURE IN ELDERLY PATIENTS

Howard M. Odel, M D.*

Nothing is more evident than that the decays of age must terminate in death; yet there is no man, says Tully, who does not believe that he may yet live another year; and there is none who does not, upon the same principle, hope another year for his parent or his friend.

—Dr. Samuel Johnson: On the death of a friend†

In the past, medical practice has been largely concerned with diseases of youth and childhood, and problems associated with aging and the care of elderly patients have assumed a place of minor or secondary importance. However, preventive medicine, sanitation and improved pediatric and general medical practice have tended to raise dramatically the age of our population. Undoubtedly, a major factor has been the saving of younger lives by control of infectious diseases. According to United States Census figures, in 1860, 13.1 per cent of the population of the United States were forty-five years of age or older; in 1900, 17.8 per cent, and in 1940, 26.5 per cent. Conservative speculation results in the estimate that by 1980, more than 40 per cent of our population will exceed forty-five years of age, and about 15 per cent or approximately a seventh, will be more than sixty-five years old.[5]

Effect of Aging Population

These figures indicate that we have an adult population which is larger in proportion than it ever has been, and one which promises to become even greater as the years roll by. No longer can the care of aged and chronically ill patients be relegated to the background. Old age is not a disease, but the disabilities and infirmities arising from it are, and with an expanding adult population with increased longevity, the problems concerned with the practice of geriatric medicine assume compelling importance.

"Controllative" Therapy

Unfortunately, many of the diseases associated with senescence are not amenable to cure. Rather, "controllative" therapy and retardation of progression must be the prime objectives. To no other group of patients do the foregoing statements apply as aptly as they do to patients suffering from

*Division of Medicine, Mayo Clinic, Rochester, Minnesota.
†Actually, his mother.

cardiovascular-renal disease. In the management of such diseases in younger persons, the physician can, in most cases, successfully treat the disease and ignore the patient, whereas, when elderly patients are concerned, multiple and difficult problems may arise for two major reasons: (1) aging patients may react differently to conventional methods of therapy than do younger patients, and (2) in diagnosis and treatment, the entire body and mind must be considered as an integrated unit.

Three Centers of Disease of Aged

In any discussion of cardiovascular-renal disease, three organs must be regarded as the major targets for attack by the disease process: the heart, the brain and the kidneys. Arteriosclerosis and its effect on vascular flow to the organ or organs in question undoubtedly heads the list of etiologic factors. However, essential hypertension, cardiac valvular defects on the basis of rheumatic endocarditis or syphilis, and chronic inflammatory lesions in the kidneys, such as glomerulonephritis or pyelonephritis, may be causative factors. Nor is any one organ singled out as the seat of attack. In fact, due to the diffuse nature of the disease process, almost invariably manifestations of involvement are found in two or more organs.

Factors in Disease

The chief underlying factor in the incidence of myocardial insufficiency in advanced age is sclerosis of the coronary arteries. Myocardial ischemia, with varying degrees of myocardial infarction and replacement fibrosis, is the actual change. In some instances, the immediate etiologic factor is acute coronary thrombosis, whereas in others, failure results from acute coronary insufficiency induced by any factor which throws on the damaged myocardium a load demanding more oxygen than the sclerotic coronary arteries can supply.

Symptoms

With the exception of Adams-Stokes attacks and abnormal cardiac rhythms (premature beats, paroxysmal tachycardia and paroxysmal auricular fibrillation or flutter), the cardiac symptoms which most frequently bring the aging patient to the physician are manifestations of congestive heart failure. In elderly patients, these symptoms may develop suddenly, with little or no previous subjective evidence of myocardial disease. Although the usual types of heart disease tend to cause death before the age of sixty-five years, some patients who have rheumatic valvular disease or syphilitic aortitis do attain old age. Essential hypertension frequently is an associated and complicating condition which increases the load on the myocardium and adds to the impairment of cardiac function. Not uncommonly, the clinical picture is rendered worse by the coexistence of some other disease related to the aging process, such as advanced general or cerebral arteriosclerosis, pulmonary emphysema or fibrosis, impairment of renal function, diabetes

mellitus or anemia. The characteristic clinical picture of congestive heart failure is well known. Left ventricular failure with cyanosis, dyspnea on effort, orthopnea and pulmonary congestion or venous engorgement, visible pulsations of the veins in the neck, tender enlargement of the liver, ascites and dependent edema associated with right ventricular failure, commonly are observed.

Therapeutic Objectives

The principal objectives in the treatment of congestive heart failure in elderly patients are three: (1) measures directed primarily toward permitting the heart more rest and thereby increasing its functional efficiency, (2) measures designed to relieve the consequences of insufficient cardiac function, such as peripheral edema, accumulation of fluid in serous cavities, anoxia and increased venous pressure, (3) institution of a regimen which is individualized to meet the needs of the patient and yet one which will assure, in so far as possible, maintenance of adequate circulatory function.

Treatment

Restoration of adequate cardiac compensation and adaptation of the patient, both mentally and physically, to the diminished state of his cardiac reserve will require considerable ingenuity on the part of the physician, for over-enthusiastic therapeutic measures are likely to bring about more harm than good, and untoward effects from the administration of drugs in customary doses may be noted, such effects being due to retardation of absorption or impaired excretion.

Rest—Complete mental and physical rest is of primary importance. The amount of restriction necessary will depend on the degree of failure; it may vary from moderate or strict limitation of physical activity to absolute rest in bed for a period of weeks or months. For patients in whom dyspnea and orthopnea associated with left ventricular failure are prominent symptoms, elevation of the upper half of the body is the position of choice. The patient should not be allowed to leave the bed under any circumstances. Interruption of rest, by allowing the patient to walk to the bathroom, may be sufficient to militate against successful results from the instituted regime. Lifting the patient on a commode placed at the side of the bed, however may be advisable for defecation, despite the indications for absolute physical rest, for should the patient tend to be constipated, it might be that attempts to use a bedpan could produce more strain than sitting on a commode. Business and family responsibilities should be strictly prohibited, and the number of visitors should be kept at a minimum. The majority of elderly patients prefer to remain at home; however, if adequate care is impossible under these circumstances, or if the patient's condition renders it necessary, hospital care may be advisable.

Sedation—Two associated symptoms extremely difficult to contend with in patients with cardiac failure are restlessness and insomnia. Often,

such patients will be rational and co-operative by day, but at night will become restless, disoriented and agitated. In the acute stage of congestive heart failure, morphine sulfate alone, administered in 1/6 to 1/4 grain (0.01 to 0.016 gm.), or combined with atropine sulfate may be required at frequent intervals. Ten to 20 minims (0.61 to 1.23 cc.) of tincture of opium, administered at intervals of four to six hours, or 50 to 100 mg. of demerol (ethyl-1-methyl-4-phenylpiperidine-4-carboxylate), may be used with beneficial sedative effect. A half to 1 grain (0.032 to 0.065 gm.) of codeine sulfate administered alone or in combination with one of the barbiturates in some cases is sufficient to control the patient's restlessness, pain or cough. In cases of mild heart failure, 1½ grains (0.1 gm.) of phenobarbital or 1½ grains of pentobarbital sodium (nembutal) or bromides may control restlessness and induce sleep, but caution should be exercised in administration of these agents, for many patients react poorly to them. Chloral hydrate, one of the time-honored yet least-often-used hypnotics, produces maximal benefit with a minimal number of untoward side effects, and its use in doses of 5 to 20 grains (0.32 to 1.29 gm.) should be considered when it is desired to assure a comfortable night for the patient. If other means of sedation fail, it may be necessary to resort to the use of paraldehyde, in doses of 4 to 8 cc. administered by mouth, or 8 to 15 cc. administered by rectum. Frequently, when restlessness is due to episodes of paroxysmal dyspnea, either 250 cc. of a 20 per cent solution of hypertonic solution of glucose or 3¾ to 7½ grains (0.25 to 0.49 gm.) of aminophylline administered intravenously, or both, may quickly ameliorate the situation. The best sedative agent in a given case must be determined by trial and careful observation, and the danger of occurrence of cumulative and toxic side effects should be kept constantly in mind.

Digitalis—Next in importance to rest in the treatment of congestive heart failure is the administration of digitalis. The maximal benefit of digitalis arises from its ability to improve the efficiency and contraction of the myocardium. For the elderly patient, the principle of administration of digitalis proposed by Withering in 1785 remains applicable, "*. . . let it be continued until it either acts on the kidneys, the stomach, the pulse, or the bowels; let it be stopped upon the first appearance of any one of these effects.* . . ." Every effort should be made to avoid gastric symptoms or other symptoms of toxicity, and the patient should be watched closely for signs of overdigitalization, such as bradycardia, premature contractions, ventricular coupling or heart block. Other symptoms of intoxication from digitalis may be blurring of vision, disturbance of distinction of color, diarrhea, oliguria and mental confusion. Elderly patients, as a rule, tolerate digitalis much more poorly than do younger persons, and may require lesser digitalizing and smaller maintenance doses. In general, one cat unit per 10 pounds (4.5 kg.) of body weight will digitalize the patient, and one cat unit taken daily is a maintenance dose.

Diuretic agents—Although digitalis may aid in eliminating excess stores of fluid in the lungs, liver and subcutaneous tissues through its ability to improve the efficiency of cardiac muscle and the circulation in general, diuretic agents play a role of prime importance in enhancing the elimination of edema fluid. The xanthine drugs (theophylline, aminophylline, theobromine) may be helpful not only in their capacity as vasodilators, but also for the diuretic effect they exert. Although they may be effective as diuretic agents among patients who have massive edema, their greatest usefulness perhaps lies in their action in stimulating urinary output and forestalling the recurrence of edema.

The greatest benefit in this regard comes from the use of acid salt diuretics, such as ammonium chloride and nitrate, or potassium chloride and nitrate, administered in doses of 60 to 135 grains (4 to 9 gm.) daily. Caution must be exercised in the use of these drugs in the presence of significant renal insufficiency, and if they are used under such circumstances, the possibility of acidosis, increasing renal insufficiency, or potassium intoxication due to the inability of the damaged kidney to excrete potassium normally, must be borne in mind. Furthermore, acid salt diuretics, particularly ammonium or potassium chloride, if used injudiciously, are likely to cause gastro-intestinal upsets. Yet, if renal function is entirely adequate, their use in combination with digitalis may hasten greatly the elimination of large amounts of accumulated fluid, and their routine administration may be useful in prevention of the recurrence of edema.

Mercurial diuretics are more rapid and more powerful in their action than are either the xanthine or acid salt diuretics. Because of the hazard of consequent retention of nitrogen, or mercurial poisoning, they should not be used if the specific gravity of the urine tends to be fixed, or if the content of blood urea or nonprotein nitrogen is significantly elevated. Values for urea of 80 mg. or more per 100 cc. of blood probably should contraindicate the use of mercurial diuretics. Albuminuria secondary to passive congestion in the kidneys is no contraindication to the use of these agents; however, when hematuria is present, caution must be observed. Rectal suppositories of salyrgan (mersalyl) or mercuzanthin, although somewhat less effective than the preparations administered intravenously, are of great advantage under certain circumstances. Recently, salyrgan and theophylline tablets and mercuzanthin tablets for oral use have been made available. The diuretic effect of these agents is less spectacular than that obtained from mercury administered parenterally, and occasional gastro-intestinal disturbances are encountered when they are used. Yet, like mercury suppositories, they serve a useful purpose in certain cases, notably among those patients with markedly decreased myocardial reserve who require frequent or persistent diuresis in addition to full digitalization in order to maintain adequate cardiac compensation. Such patients may require the periodic intravenous injection of 1 to 2 cc. of salyrgan or mercuzanthin every seven to ten days,

or one to five tablets daily taken orally, the dosage carefully adjusted to the need of the individual patient.

Diet—In congestive heart failure, elderly patients are especially likely to suffer from gaseous dyspepsia and constipation arising, in part, from disturbance of gastro-intestinal tone and secretion resulting from circulatory interference, and in part from edema in the wall of the gastro-intestinal tract. Sometimes, abdominal distention may cause embarrassment of the heart by means of upward displacement of the diaphragm, and occasionally nausea and vomiting create a serious problem. The diet should consist of simple, easily digestible foods, sufficient in caloric value to maintain the body weight at or slightly below the normal figure. This diet should contain adequate carbohydrate and a moderate amount of protein and fat.

It should be remembered that the vitamin reserve of aging persons invariably is lowered because of anorexia, inadequate intake of food or faulty dentition, and the diet should be fortified with vitamin supplements, particularly B and C. Restriction of sodium chloride is advisable since the water-binding tendency of the sodium ion and its effect in increasing edema are well known. In the past, during the stages of acute decompensation, it has been considered advisable to restrict the daily intake of fluid to 1,500 to 1,800 cc. More recently, the work of Schemm,[3, 4] Bridges, Wheeler and White,[1, 6] and others has shown that fluids need not be restricted but that water should be given freely, provided that the intake of sodium is reduced to a minimum. A high fluid-low sodium regime has been found to be a useful adjunct in the treatment of certain types of refractory cardiac failure. This is particularly important in patients who have any degree of renal impairment and retention of nitrogen, for restriction of fluids in such cases only serves to intensify the degree of renal insufficiency. Constipation and straining at stool should be avoided, if possible, by the routine use of mild laxative agents, such as mineral oil, milk of magnesia in small doses, and bulk-producers such as agar or similar compounds. The use of drastic cathartic agents is to be discouraged because of their weakening effects on the patient and their tendency to provoke gastro-intestinal disturbances.

When gastro-intestinal disturbances occur, associated with nausea and vomiting, careful study is required to determine whether the symptoms are due to venous stasis, improper diet, overdigitalization, or too-heroic medication otherwise.

Other measures—The administration of oxygen by mask, nasal catheter or tent occupies an important place in the management of congestive heart failure, particularly in the combating of cyanosis and the relief of severe dyspnea. The cautious intravenous administration of 250 to 500 cc. of a 20 to 25 per cent solution of glucose, once or twice daily, frequently is helpful in cases of severe congestive heart failure, because of the diuretic effect of this solution and the nutrient effect it has on the myocardium. Aminophylline (theophylline with ethylenediamine) in doses of

3¾ to 7½ grains (0.25 to 0.49 gm.) added to the glucose may be an important therapeutic adjunct.

Venesection, one of the oldest therapeutic procedures, occupies an important place in the treatment of congestive heart failure, and its intelligent use may be a life-saving measure. Venesection is particularly effective when the pulmonary circulation has become engorged, for it reduces the volume of venous blood which makes possible more efficient cardiac contraction. Rapid removal of 300 to 600 cc. of venous blood may be followed by definite and striking symptomatic relief, may permit the heart to keep pace or even to overcome its load, and frequently may be the turning point in restoration of function.

In some cases of very severe congestive heart failure, accumulation of free fluid in the serous cavities, pleurae, pericardium or peritoneum may be sufficiently great to interfere seriously with adequate function of vital organs, and in such cases mechanical removal of the fluid by paracentesis may be necessary. The drainage of peripheral edema by the insertion of needles or cannulas into subcutaneous tissues of extremities or genitalia, first advocated years ago by Southey, is to be discouraged.

Convalescence—The period of rest in bed necessary in the management of an episode of heart failure depends entirely on the degree of congestive heart failure present and the response of the patient to treatment. In general, the patient should be kept in bed until all symptoms related to failure have disappeared, until an essentially normal cardiac rate and rhythm have been restored, and until all signs of abnormal accumulation of fluid in the tissues and serous cavities have cleared. However, it is advisable for the patient to start passive exercise while he is yet in bed, and he should be encouraged to start getting out of bed for short periods as soon as compensation has been restored. The periods in which the patient is allowed to be up should be gradually lengthened until he eventually is able to be out of bed for an entire day without undue fatigue, acceleration of pulse rate or dyspnea. During these latter intervals, bathroom privileges and walking about the room may be allowed, but the climbing of stairs should be delayed until the patient is stronger. As recovery progresses, activity gradually may be increased and walking for greater distances may be permitted. Eventually, some patients who have myocardial damage of relatively mild degree may find it possible to spend several hours daily engaged in office or other light work. Eight to ten hours of rest in bed nightly are important, and the patient should be encouraged to take a rest immediately after each meal. Since an episode of cardiac failure may be ushered in with an acute infection of the upper part of the respiratory tract, prophylactic measures for the prevention of such infections should be employed. Whenever possible, it is to the advantage of such patients to spend the winter months in a warm climate, thereby avoiding the rigors of a cold winter, and at the same time reducing the risk of respiratory infections. Generally speaking, patients who have

myocardial insufficiency find themselves more comfortable in low, rather than high, altitudes.

Weighing the patient at periodic intervals is important, for a sudden gain in weight frequently may be the earliest clue to retention of fluid and recurrent failure of the right side of the heart.

Psychotherapy—Psychotherapy occupies a very important place in heart failure among elderly people. A sympathetic understanding of old age and its problems and an intimate knowledge of the individual patient's philosophy and interests in life are essential to assist in his adjustment to the diminished functional capacity of his heart on recovery from an acute episode of failure. In a definite but kindly manner, the importance of his constantly living within the limits of his decreased myocardial reserve must be impressed on him. Whenever cardiac reserve and the type of work permit, a limited number of hours of work at a lessened pace may be allowed each day or a certain number of days each week, for sudden disruption of long-established habits and motives is likely to induce mental depression and melancholy. Maintenance of an active interest in life is most essential. In the rehabilitation of patients who fail to regain sufficient myocardial reserve to carry on ordinary activity without dyspnea or precordial discomfort, occupational therapy often is helpful. The aging patient with an engrossing but not strenuous hobby is most fortunate.

Summary

Enough has been written in this paper to make it evident that the management of congestive heart failure occupies a place of paramount importance in the practice of geriatric medicine, since the greatest cause of such heart failure is arteriosclerosis, a condition which is almost synonomous with aging. Because of the diffuse nature of the arteriosclerotic process, the treatment of the elderly patient must include careful evaluation and consideration of other organs, notably the brain, kidneys and digestive tract which, because of their associated functional impairment, may create problems to complicate the successful management of cardiac failure. This situation only serves to emphasize the importance of consideration of the entire body and mind as a whole in the diagnosis and management of cardiac failure in the elderly patient. For this reason, any discussion of therapy must be general, for, although the fundamentals of treatment are almost universally the same in all cases, the therapeutic details must be varied and adapted to the individual case.

References

1. Bridges, W. C., Wheeler, E. O., and White, P. D.: Low-sodium diet and free fluid intake in the treatment of congestive heart failure. New England J. Med. 234:573-578 (May 2) 1946.
2. Johnson, Samuel: The idler, No. 41, Saturday, January 27, 1759. In: The works of Samuel Johnson, LL. D. A new edition. In twelve volumes. With an essay on his life and genius; by Arthur Murphy, Esq. London, Printed by Luke Hansard & Sons for Nichols and Son, et al., 1816, vol. 7, pp. 133-137.
3. Schemm, F. R.: A high fluid intake in the management of edema, especially cardiac edema. I. The details and basis of the régime. Ann. Int. Med. 17:952-969 (Dec.) 1942.
4. Schemm, F. R.: A high fluid intake in the management of edema, especially cardiac edema. II. Clinical observations and data. Ann. Int. Med. 21:937-976 (Dec.) 1944.
5. Stieglitz, E. J.: Orientation. In: Geriatric medicine; diagnosis and management of disease in the aging and in the aged. Philadelphia, W. B. Saunders Company, 1943, chap. 1, pp. 1-29.
6. Wheeler, E. O., Bridges, W. C., and White, P. D.: Diet low in salt (sodium) in congestive heart failure. J. A. M. A. 133:16-19 (Jan. 4) 1947.
7. Withering, William: An account of the foxglove, and some of its medical uses: with practical remarks on dropsy, and other diseases. London, G. G. J. and J. Robinson, 1785, p. 186.

PRECLINICAL MEDICINE AND GERIATRICS

Malford W. Thewlis, M.D. and E. T. Gale, M.D.*

Recent advances in medicine have given us a large measure of control over infections; life has been prolonged; increased life span, of course, means an increase in degenerative diseases. Too many at the age of 60 or 70 can no longer enjoy life because of arterial hypertension, cardiovascular disease, peptic ulcer, or hypertrophied prostate gland. The greatest challenge to the medical profession is perhaps the preservation of normal function in organs seemingly predestined to early failure.

Principle and Scope

Preclinical medicine, as the name implies, is the treatment of disease before visible manifestations can be detected. When a patient consults one of us about organic disease, we are dealing with someone who has, in all probability, been conditioning himself for the disease for at least twenty years. During these conditioning periods disease soils become fertile, so to speak. If they could be detected and attacked early, much of the suffering inherent to later life could be prevented. Practically everyone has a weak link which eventually yields to prolonged strain.

The goal of preclinical medicine is the study and interpretation of disease soils, constitutional factors, disease tendencies, preclinical states, and predisease. Predispositions and tendencies to disease are sometimes determined through periodic health surveys. Attempts are made to prevent weaknesses. Preventive medicine as practiced today deals not only with the control of communicable diseases but attempts to eliminate or retard pathologic processes already present. Once a pathologic change has occurred, it is usually accompanied by impairment of tissue function and we have to focus on the protection of damaged tissues. More can be achieved if, in starting from sound premises after thorough examination, we try to foresee what is likely to occur in years to come. Preclinical medicine involves an appraisal of distant probabilities and possibilities. One may argue that attempts at long-range protection will only create disease-conscious patients. There is no reason why this should be so, if the physician does not alarm the patient unduly. An intelligent person is likely to feel more secure after a complete health survey.

---

*Malford W. Thewlis, M.D., is Director, Thewlis Clinic, Wakefield, R. I.; Secretary, American Geriatrics Society, Author of *Care of the Aged (Geriatrics)*, now in its fifth edition.

E. T. Gale, M.D., is Visiting Physician, South County Hospital, Wakefield, R. I.

Read before the Fourth Annual Meeting of the American Geriatrics Society, Atlantic City, N. J., June 6, 1947.

Every patient presents an opportunity for preclinical study. A youth of 20, of the linear type, states that his 40-year-old father is suffering from an intractable peptic ulcer. The son wishes to know what he can do during the next 20 years to avoid a similar condition. Should he be examined and, if ulcer-free, told to forget ulcers until suffering from stomach pains relieved by food? A patient of 70 may wish to avert latent disorders which could cause unnecessary suffering at 80 or 90. Though handicapped by co-existing diseases, an elderly person may be able to carry on until an essential link in the chain breaks down. Almost any predisease history yields constructive clues.

The range of preclinical medicine cannot be clearly determined. A carefully established diagnosis, revealing an inherent weakness, should be accepted by the patient. He should be willing to restrict or regulate his activities according to the physician's advice. The patient must be considered as an entity—a complete functioning unit—and special attention must be paid to the hereditary background, effects of past diseases, environmental and psychologic influences. The medical history must be detailed and complete. The physician should be generous with time and effort if a true health inventory is to be expected. Sometimes failure to ask a specific question, perhaps related to the presence of diabetes or allergy in relatives, may deprive us of important clues. History-taking is the responsibility of the physician, not that of a nurse. One may argue that the average physician is too busy to devote sufficient time to these examinations. If this were so, preclinical centers would soon solve the problem. Let us stress that the work can be done in a physician's office if he so chooses. Next in importance to a comprehensive history is a meticulous physical examination. Here again the person must be considered as a whole and great attention paid to superficial characteristics and variations.

Unless the meaning of preclinical therapy is conveyed to the patient, we cannot hope for maximum results. The goal is easily grasped by the average person, young or old. The young are less likely to accept the implications of disease prevention than the elderly who are more concerned about health and less about their activities. The geriatrician can help persons from the ages of 20 to 40, observed from the preclinical medicine angle, with prevention of premature deterioration in mind. He can treat the patient during his advancing years for whatever residual disease may occur. Geratology or preclinical medicine could be covered by one term—geriatrics. This would avoid confusion. A new speciality in medicine is not advocated, rather focusing on an important branch of internal medicine. Pediatricians are the best preclinicians; unfortunately their preventive work is not always followed up by someone else when the patient emerges from childhood.

If prevention of disease seems plausible in theory, why has the concept not already been widely acted upon? Both the physicians and public are to blame. Unfortunately, the majority of present-day physicians still cling to

a stereotype office routine, which seldom measures up to the standards set for them in medical school. Interviews with patients are too often casual and examinations superficial. Some have attempted to sidestep the more exacting task of history taking by relying on extensive and costly laboratory and roentgen examinations. Most patients are still treated symptomatically —a drug for each complaint. Some physicians have stated that whenever they saw a patient with fever, pain, and malaise, they first tried aspirin tablets and later one of the sulfa drugs, penicillin, or streptomycin. If the patient did not recover quickly, they made a physical examination. This is, of course, not common practice among us, but it does occur. It is a poor form of "plumbing," so to speak; it does not measure up to the standards of good veterinary medicine as practiced in the average animal clinics. The medical profession will have to devote more time and energy to disease prevention, if only because a public demand must be met. Medical history has its cycles, some brilliant, others dark. Geriatrics was not recognized until twenty-five years after Nascher concentrated on it. It will be a few more years before preclinical medicine becomes well established. Incidentally, not too long ago pediatrics was unknown. In 1860, an announcement by Jacobi in New York City that lectures on pediatrics would be given was ripped from the bulletin board of a medical school by its dean who did not believe in pediatrics.

Factors Influencing Preclinical Medicine

Heredity looms large in the preclinical pattern and a completed pedigree blank may prove more significant than the physical examination. Blacker stated that most of the diseases frequently observed are inherited; the importance of this has not been recognized because eugenic studies have emphasized the rarer conditions. The exact nature of the characteristics transmitted depends on whether the character is dominant or recessive. It is familiar knowledge that the color of eyes, hair, and skin, height and body contours, depend in a large measure upon the forbears. These, however, are relatively unimportant from the longevity angle; yet they do emphasize the theoretical chance of inheritance of such serious conditions as mental illness, epilepsy, diabetes, cancer, allergy, and diseases of the eye, ear, cardiovascular system, and gastrointestinal tract. It is unfortunate that the public and insurance companies have more respect for heredity than the average physician. By modifying whenever necessary the patient's mode of living, the physician can attempt to forestall the consequences of hereditary tendencies. Whenever possible, physicians should acquaint persons seeking advice before marriage with the remote or probable possibilities of morbid inheritance. A distant relative with diabetes mellitus is perhaps a warning to keep one's weight normal as a preventive measure against that disease. A family background of arterial hypertension should impress the patient with the necessity of avoiding unnecessary strain. If he does, he may last longer. Many abnor-

malities revealed during the examination may be corrected by surgery. It is wiser to correct a prolapsed uterus at 50 than it is at 70.

One of the most important aspects of preclinical medicine (geratology), is the study of nutrition and early correction of nutritional deficiencies. Nothing approaches this in importance in the prevention of disease. The diet of every patient should be carefully analyzed. Despite the end of war rationing, there is a deficiency of calcium or vitamin C intake in almost every patient of advancing age. One hears much about the early diagnosis of cancer, but very little about the early diagnosis of nutritional disorders.

No survey is complete without a study of the emotional background. The current tendency to emphasize the close connection of mental and physical disturbances, of mental stress and physical strain, is a step in the right direction. The preclinical approach must be in a large measure that of mental hygiene. Much of the discomfort of old age is due to lack of mental guidance before the retirement age. One point to impress upon people is that one should not just retire; one must retire to something. The stress under which a person lives often determines the rapidity with which a disease soil becomes fertile: economic, financial, and social factors become important influences and must either be controlled or adjusted. A person with a predisposition to ulcer may withstand heavy financial hardships without symptoms until some social conflict causes anxiety. Then his sleep is disturbed, his appetite fails and he enters a vicious cycle. The amount of external stress and internal strain that one can endure depends on the person's psychic and physical vulnerability. The physician can do much to avert emotional crises.

Infections, especially prolonged or recurrent ones, are likely to condition organs for disabling diseases; therefore, it is wise to prevent acute illnesses whenever possible, to anticipate it, and to afford maximum protection to the aged person during bacterial or virus invasions. Just as important is the necessity of complete recovery before the patient is allowed to return to work after an illness. It is well known that infections and fever practically always increase the daily requirement of insulin in persons with diabetes. Thus it is logical to assume that all organs of the body are thrown off balance, their activity being either enhanced or depressed. In the aged patient with low functional reserves, added precaution is essential to avoid breakdown of vital organs.

Examples of Disease Entities

Draper differentiated certain constitutional types. In a large number of instances, people with certain characteristics seem to be susceptible to a particular disease.

The peptic ulcer type person is tall, thin, and asthenic—the linear, "thyroid" type. The upper half of the face is wide, the nose thin and prominent, the chin small and pointed; the fingers and nails are long and slender.

Anyone possessing these characteristics, plus a family history of peptic ulcer or indigestion, stands an 80 per cent chance of having ulcers. In such cases, a protective regimen should be instituted early; foci of infections removed, small quantities of food given between meals and at bedtime, and excessive indulgence in food, alcohol, tobacco, not to mention emotional upheavals, should be avoided. Once a diagnosis of ulcer is established, the patient faces prolonged treatment. Furthermore, he will not be able to obtain life insurance.

A person, especially a woman who is "fair, fat, and forty" (the lateral, "pituitary" type), has long been considered likely to suffer from gall stones. Other features of the lateral type should be mentioned, such as massive softness, broad and curving contours, and broad, round face with eyes set close together. A tendency to hypercholesterolemia may be found. Avoidance of infections, reduction of weight, low cholesterol diet, and a more active life may help prevent the formation of calculi in later life. The person most likely to have pernicious anemia, according to Draper, has eyes set far apart; gray eyes and hair; soft, fine hair which tends to turn gray early in life; short upper face but a wide jaw; extremely short trunk; and a deep chest with a wide costal angle. The conditioning period for pernicious anemia, like most other chronic diseases, probably extends over many years and during this time persons of this type should avoid undue stress, tobacco, and alcohol. Nutrition must be adequate. Anemia must be corrected, for hypochromic anemia may be a conditioning factor. Potential victims of other diseases could be similarly characterized, but these three examples serve to show how preclinical medicine fits into the geriatrics pattern.

The arteriosclerotic or hypertensive type is probably the person who has an hereditary background of degenerative disease, and who gives evidence of premature aging. Very little is known about the causes of arteriosclerosis, but we do know that hypercholesterolemia is a contributing factor. When this condition is present, there are several factors which are important in controlling the condition, namely a low cholesterol diet, desiccated thyroid, and potassium iodide. Recent studies indicate that these factors reduce cholesterol in the blood. Much more experimentation is required, however, before definite conclusions can be arrived at. Our impression is that many people often live normally and long in spite of arteriosclerosis unless the condition is limited to the coronary arteries.

Method of Attack

The Indiana State Board of Health blazed the trail for public health educational programs for the prevention of disease. The Department of Adult Hygiene, under the direction of William F. King, has taken a long step in the right direction. Disease prevention in industry, through periodic health surveys of workers is also a part of preclinical medicine.

A few suggestions may help the general practitioner in the preclinical

approach to geriatrics. He must return to a "medical school" type of history and physical examination. Special emphasis should be placed upon the family history, as well as individual weaknesses and predispositions to diseases. He could occasionally obtain information from relatives of the patient, especially if there is any doubt as to the completeness or reliability of the history. Satisfactory arrangements for diagnostic facilities, either in the physician's office or in nearby clinics and hospitals, are desirable, so that a complete survey can be made and no illness overlooked. A good way to stimulate interest in disease prevention is to distribute explanatory pamphlets to patients. We often hear that the public is not ready for such reading, or that most patients will not willingly pay for thorough examinations. This has not been our experience. It is the physician who is not always willing to put in the necessary time.

In another article, we shall outline a program for the practitioner interested in preclinical medicine.

SUMMARY

The study of prevention of common diseases and the application of preclinical therapy during the predisease period cannot be overstressed. The pattern which concerns us includes disease tendencies and disease "soils." Geriatrics and preclinical medicine could be combined. Paradoxical as it may seem, geriatrics could begin with preclinical studies at the age of twenty. The geriatrician seeks a synthetic diagnosis. He views the patient as an entity, against a specific background. He must consider family, heredity, racial factors, intellectual equipment, social adjustment, climactic conditions, nutrition, and the influences of past diseases. This can be done through studies which do not necessarily imply hospitalization. They open a wide field to general practitioners who are in a position to detect preclinical symptoms because of their permanent contact with most of their patients. Thus the general practitioner can be a cornerstone in the development of preclinical medicine and geriatrics. A new specialty is not suggested, rather integration—geriatrics is a part of internal medicine.

Incidentally, ambulatory medicine can be an asset to industry if periodic examinations of workers are made. Public health can attack the problem in the spirit shown by the Indiana State Board of Health.

REFERENCES

BLACKER, C. P.: The Chances of Morbid Inheritance, London, H. K. Lewis & Co. Ltd., 1934.
DRAPER, G.: Human Constitution, Philadelphia, 1925, W. B. Saunders Co.; Disease and The Man, New York, 1930, MacMillan Co.
KING, W. F.: Health Guidance in Advancing Years, Geriatrics, 1:442, 1946.
STIEGLITZ, E. J.: A Future for Preventive Medicine, New York, 1945, The Commonwealth Fund.
THEWLIS, MALFORD W.: Prevention in Geriatrics, M. Times, Long Island, M. J., 61:240, 1933.
THEWLIS, MALFORD W.: Preclinical Medicine, Baltimore, 1939, Williams and Wilkins.
THEWLIS, MALFORD W.: Care of the Aged (Geriatrics) Ed. 5, St. Louis, 1946, C. V. Mosby Co.

DISCUSSION

by Albert Mueller-Deham, M. D.

Geriatrics, with all its importance, is not a strictly defined specialty. This fact becomes patent in Dr. Thewlis' paper. He deals with the problem of preclinical medicine which can be attacked from various angles; that of hygiene, preventive and social medicine.

Dr. Thewlis views the subject with the eyes of a geriatrician. He is right, therefore, to speak little of communicable or occupational diseases. His experience tells him that constitutional and hereditary defects are often manifested in later years, that neglect and the sins of youth must frequently be paid for in the period of old age. The examples he selects are striking. All the important factors are presented with an even balance. I can, therefore, merely add a few remarks.

In the management of nutrition not only must the need for an ample diet, sufficient in all constituents, be impressed on the patient but also an avoidance of too much, be it proteins, carbohydrates, fats or even vitamins. Dr. Thewlis does not overlook advice on moderation, but in view of the present demands for continuous dietetic luxury, it is perhaps well to stress this point. Carbohydrates make for obesity and diabetes, cholesterol surplus, arteriosclerosis, and so on. Proteins doubtless have some protective influence on the cells of liver and kidneys, but they also burden those same cells with the functions of metabolism and secretion. There is certainly at present less gout in England than in the times of high living, and the blood pressure figures are presumably lower.

Another very important point in preclinical medicine is the recognition and treatment of chronic infections in their early stages, with or without minimal clinical symptoms and signs.

Dr. Thewlis advocates the time-honored method of an exact story and meticulous physical examination, so often neglected today. The old-fashioned family doctor would be the ideal person to practice preclinical medicine. He has no need to ask questions; he knows the whole hereditary, emotional and social background of his group and has treated their diseases many years. This type of practice is retroceding, however, as the busy general practitioner with his waiting room full and a list of calls has not the time.

Every internist who is worth his salt must consider the whole personality of his patient. This, however, entails a lengthy first examination, even without additional diagnostic procedures. Health surveys in institutions are valuable, but easily become mechanized. The most interesting and systematic experiment in preclinical medicine is being conducted in England since eight years—a Health Center in Peckham, a suburban community of Greater London with some 5000 families, of which 1500 participate; they are neither too poor nor too rich, but are, rather, lower middle class.

The unique features are that not only the individual but the whole family constitutes the unit for observation and consultation at this medical Health Center which has been installed to serve at the same time as a community center for sport, recreation and health treatment.

Regular check-ups of the whole family are combined with a discussion of their medical and mental troubles. Hygienic and diagnostic advice is given but treatment of disease is left to the medical practitioners.

Under the guidance of two inspired physicians, a man and a woman, it appears to work efficiently and is a pioneer institution.

Dr. Thewlis mentions one pitfall of preclinical medicine. We live in the time of psychosomatic medicine and neurotic tendencies. An incautious sentence from a physician may be meant only as a wholesome warning but could result in a chain reaction of anxiety and neurotic complaints. Everything depends on the type of the patient and the manner in which he is spoken to.

Sometimes, Dr. Thewlis will agree, it is better to keep silent. It takes not only a good and experienced doctor but also a wise one to practice preclinical medicine. Dr. Thewlis himself is eminently suited to this task.

1946 STATISTICS SHOW INCREASE IN LIFE SPAN

DESPITE the handicap of an unfavorable start, the year 1946 established a new low record for mortality. According to the experience of the Metropolitan Life Insurance Company, with its many millions of Industrial policyholders in the United States and Canada, the crude death rate last year, exclusive of deaths from enemy action, was slightly below the figure for 1945 and equal to that of the previous low, recorded in 1942. When allowance is made for the aging of the insured group, the death rate in 1946 sets a new minimum. It is noteworthy that the year was the third in succession to show a decrease in mortality.

Another indication that 1946 was a banner health year is furnished by the figures on expectation of life at birth. The provisional figure for last year, excluding deaths due to enemy action, is 65.58 years, the highest ever attained in this insurance experience. The gain in 1946, over 1945, of more than one-half year in expectation of life at birth, brings the total increase to more than five years within the past decade, and to almost 19 years in the past 35 years.

The diseases of middle and later life, on the whole, made a very satisfactory record in 1946. While the crude rates were, in most instances, somewhat higher than in 1945, the increases were largely the result of the higher average age of the insured group. On an adjusted basis, the death rates from cancer and from diabetes showed practically no change from 1945, while the group of cardiovascular-renal diseases registered a decline. Most of the improvement in this latter group resulted from a decline in the deaths from "other chronic heart diseases."

NUTRITION IN CARDIO-VASCULAR DISEASE

Don Carlos Peete, M. D.*

Research during the past ten years has been very fruitful in unlocking many of nature's secrets of nutrition. These studies have led to a clearer understanding of nutrition, especially the various vitamins and amino acids. The diagnosis of the deficiency states is not always clear-cut and for that reason many people are taking vitamins unnecessarily. Our problem would be simplified a great deal if laboratory tests could be developed which could be applied easily by the practicing physician for the accurate determination of the various deficiency diseases. Until specific tests are devised, a careful dietary history should be taken and a physical examination made for evidences of deficiency in total caloric intake, with especial emphasis on the possibility of a lack of protein, vitamins and minerals. Experience has shown that most people form rather fixed habits of diet. If the patient is requested to bring a list of foods eaten during a two-week period, a fairly accurate estimate of the quality of his diet may be made. A careful dietary history is important because the early recognition of nutritional deficiency may prevent development of a chronic, prolonged illness. Low protein reserves lead to inadequate anti-body formation with lowered resistance.[7, 8]

When we consider that the heart is the only organ in the body that functions continuously from birth until death, we must realize that this functioning must be directly related to adequate nutrition. The nutritional inadequacy may be such that it produces a disturbed physiological reaction without pathological evidence of disease. For instance, it has been shown that on a starvation or low caloric intake, even though the diet is balanced, the pulse is slowed, the blood pressure is lowered, and the basal metabolism is below normal.[1, 2, 3] In obesity or high caloric intake, the pulse is increased, the blood pressure tends to be elevated and the basal metabolism is increased. It has long been recognized that obesity increases the work of the heart. The increased benefit derived by weight reduction is brought about by reducing the metabolism, improving the ease with which the lungs are ventilated by lowering the level of the diaphragm and by reduction in the size of the capillary bed. Those who are overweight, with hypertension, usually have a lowering of the blood pressure with weight reduction.[33] Only in extreme changes does histological examination of the heart muscle show evidence of

*Don Carlos Peete, M.D., is Associate Professor, Department of Internal Medicine, University of Kansas School of Medicine; member of staff, University of Kansas Hospitals, Kansas City, Kansas; Cardiologist, Children's Mercy Hospital; member visiting staff, Trinity Lutheran Hospital, Kansas City, Mo., and St. Margaret's Hospital, Kansas City Kansas.

deficiency states. The electrocardiogram is of some value in recognizing changes due to deficiency disease, and those changes will be pointed out later. It is important, too, to recognize the interlocking importance of the various foods, minerals and vitamins. Nitrogen metabolism is directly dependent upon calcium metabolism; calcium metabolism is, in turn, dependent on adequate Vitamin D stores. Carbohydrate metabolism is dependent on thiamin chloride and niacin. The heart muscle is unable to use glycogen efficiently without protein. Tissue synthesis, as shown by Cannon and others, cannot take place unless ten of the specific amino acids are present.[4, 23, 25] Recently it has been shown that many of our vitamins are synergistic and play a role in helping to spare each other. Reports indicate that man, as well as some of the lower animals, is able to synthesize certain of the B vitamins. During the administration of penicillin, by Ellinger and Shattock,[28] and sulfaguanidine, by Hardwick,[29] nicotinamide deficiency was precipitated. This was evidenced by the pellagrous lesions of the tongue and skin which responded to nicotinamide (niacin) therapy.

It is possible to recognize some specific changes affecting the cardiovascular system from deficiencies in certain of the various foods and vitamins and we shall point out the important ones.

A lowered blood sugar or an overdose of insulin may precipitate an attack of angina pectoris. We are all familiar with the dramatic improvement after administering glucose intravenously during heart failure, especially when due to arteriosclerosis. Not only are adequate carbohydrate stores necessary, but thiamin chloride (vitamin B_1) and niacin (nicotinic acid) must be present in adequate amounts to meet the metabolic requirements or the glucose cannot be metabolized. A deficiency disease known as beri-beri will eventually follow if the thiamin intake continues inadequate. The wet form results from the effects of thiamin deficiency[34] on the heart and vascular system, and there is usually an associated hypoproteinemia. This disease is common where polished rice is used primarily to satisfy food requirements or where alcohol has largely or wholly replaced the usual diet. Many elderly people with coronary sclerosis, subsisting on marginal diets, are benefited by increasing their thiamin and protein intake. We should also remember that patients experiencing long continued heart failure with chronic passive congestion of the liver and gastro-intestinal tract are often unable to absorb adequate amounts of thiamin, protein and glucose. Therefore, they may suffer from a secondary deficiency state that adds to their heart failure. We have seen several patients in the older age group (65 to 80 years) with coronary sclerosis manifesting psychotic symptoms and classified as senile psychosis. They were greatly improved with adequate protein and vitamin therapy. Many of these people have poor diets due to inadequate incomes or ignorance. This does not mean, however, that all senile psychoses will be improved by dietary methods.

The signs and symptoms of beri-beri are variable, depending upon the

severity of the disease. Exhaustion, palpitation, a feeling of constriction through the chest, increased irritability, paresthesias and hardness, with marked tenderness of the calf muscles may be noted. More severe forms may present edema of the lower extremities. The patient may complain of a cough, dyspnea, orthopnea and fullness of the abdomen. Finally, the edema becomes generalized, the pulse weak and rapid, the blood pressure low, and the patient is apathetic. Heart tones are weak and irregularities such as ectopic beats, auricular fibrillation and gallop rhythm may develop. Heart murmurs may result from dilatation and may be confused with organic murmurs of the heart. Deficiency diseases are usually multiple and for that reason the diagnosis will, many times, be suggested by the red, dry tongue, cracking and soreness of the angles of the mouth, injection of the conjunctiva, diarrhea, and mental changes. Dry, pigmented, exposed surfaces of the body are evidences of other factors of Vitamin B deficiency. The bleeding, spongy gums, and purpuric spots may indicate the lack of Vitamin C. The thickened, scaly, dry skin, or hyperkeratosis, and night blindness is often indicative of Vitamin A deficiency; dental caries, the bony changes of rickets as shown by scoliosis, bow legs and rachitic chest suggest a chronic deficiency in calcium metabolism which may mean a lack in either calcium or Vitamin D or both.

Weiss and Wilkins have shown that the electrocardiographic changes produced in thiamin deficient states are pathognomonic and are reversible with adequate thiamin chloride therapy.[6] These electrical changes consist of a low voltage, isoelectric or inverted T waves, increase in the QT time, and ectopic beats. Radiographically, the heart may or may not be enlarged. When it is enlarged, it returns to normal with adequate treatment with thiamin chloride. Pathologic findings reported by Weiss and Wilkins in a patient 36 years of age, an alcoholic dying of a sudden circulatory collapse due to pellagra and polyneuritis, were hydropic degeneration, fragmentation and separation of the muscle fibers with perivascular edema.[6] It is of much interest here to point out that during the depression years of the early '30's, two patients, brothers, suffering with influenza, came under my observation. Both died rather suddenly as a result of circulatory collapse, with marked edema and dilatation of the heart. Both of these men had been on generally deficient diets. The autopsy findings showed very similar changes in the hearts, such as reported by Weiss and Wilkins. Infections may produce prolonged illness or death in patients who have been on low protein diets.[7, 8]

Until Feil (1936), in a study of 38 cases of pellagra, found 19 with abnormal electrocardiograms, there was no evidence that niacin deficiency (pellagra) had any specific effect upon the heart.[9] Mainzer and Krausse (1940) found a high incidence of changes in the electrocardiograms of pellagrins.[10] They did not believe the evidence to be conclusive that these changes were due to niacin deficiency. Smith, Ruffin and Smith (1937) made the first case report of low, upright T waves in all leads in a patient suffering

with pellagra.[11] After seven days of treatment, T waves were normal. Rachmilewitz and Brawn (1945) studied 27 patients with pellagra, and 16 patients showed depression or flattening of the T or the ST segments in two or more leads. These changes were reversible in six to seven days with the administration of 350 to 500 mg. daily of niacin in all but two patients.[12] These two patients had an associated severe hypoproteinemia.

Case 17: Total blood protein 4.7 gm., albumin 1.93 gm. per 100 cc. After serum proteins were restored by feeding high protein diet to 6.5 gms. with no change in the cardiogram, niacin therapy 500 mg. by mouth and 100 mg. intramuscularly again was tried, a return to normal of the cardiogram followed.

Case 18: Blood proteins 3.7 gms., albumin 1.39 gms. per 100 cc. 400 cc. of blood plasma were given and again niacin 300 mg. daily by mouth was given for five days. There was a striking improvement, clinically, and also a more normal cardiogram was obtained.

Their studies indicated that only those patients with visceral symptoms of pellagra showed changes in the cardiogram. These symptoms are glossitis, diarrhea and mental changes. Those patients without changes in the cardiogram showed principally the skin changes of pellagra.

Another interesting change in the cardiogram is seen in calcium deficient states. This consists in a prolongation of the QT time or contraction time of the ventricle. The time varies with the rate, it is shorter with faster rates and longer with slower rates. Usually, variation is from 0.25 second for a rate of 120 per minute to 0.45 second when the rate drops to 45 per minute. This prolonged contraction time in hypocalcemia was first proved in a patient having tetany after removal of the parathyroid glands at thyroidectomy. If these changes cannot be altered with calcium and Vitamin D, some other cause should be sought for the prolongation of the ventricular contraction time.

The nutritional role of cholesterol in human coronary arteriosclerosis has recently had much publicity due to the work of Leary,[13] Hueper,[14] Root, Gordon, Bland and White,[15] and others. Many authorities have shown that there is a significantly greater incidence of angina pectoris and coronary occlusion in patients suffering with diabetes mellitus.[15, 16, 17] Hypothyroidism is associated with moderate atherosclerosis. Bruger and Rosenkrantz have found that hypometabolism in persons over 55 years of age is associated with a greater incidence of arteriosclerosis.[18] Shaffer[19] studied a group of 100 patients, age period from 45 to 65 years, who had been on high milk and cream diets for not less than five years. Many had been on the diet intermittently for ten to fifteen years, some for 35 years; 500 patients in the same age group were used as a control. The incidence of coronary arteriosclerosis in the group on the high cholesterol diet from the milk and cream was no greater than the control group. His conclusion was that the nutritional role of cholesterol in the genesis of human atherosclerosis is of

doubtful significance unless there is an associated disorder of the endocrine glands.

Experimental work by Huber, Brown and Casey[20] indicates that cholesterol arteriosclerosis in the rabbit can be prevented by the use of pancreatic extract called lipocaic.

Dam[21] and Bruger,[22] working separately, have published work to show that vitamin E is ineffective in preventing experimental atherosclerosis in the rabbit. Vitamin E is probably the most enigmatic of the vitamins and much work must be done before we can accept the recent wave of enthusiasm for it in the treatment of coronary sclerosis. For years, special dietary management during heart failure has been an important part of the treatment. Karell, in 1865, recommended 200 cc. of milk four times daily. This gives restriction of fluids, low salt and low calories and, for a few days, may be very beneficial. This is, however, a deficient diet and should be added to after three or four days. Eggs, cooked cereals, cottage cheese, lean meat, tomato juice, toast with unsalted butter, and four ounces of orange juice may be added, keeping the diet salt free and allowing up to 1500 cc. of fluids daily if the patient wishes. Since it has been shown that it is the sodium ion[30, 31, 32] that the kidneys has trouble in excreting, in heart failure, sodium chloride, sodium bicarbonate and all alkalinizing powders containing soda should be restricted.

We believe that most of the recommended diets are too low in protein. According to Cannon,[23] once these protein reserves are lowered, an excess amount is required for replacement. We have a need for increased amount of protein because of the lowered efficiency of the heart during failure, which is shown by increased heart rate with lowered output of blood. There is a decrease in its efficiency of resynthesis. Blood proteins are lost, also, in retention of fluids in edema and ascites. In a study now being made, we have found the proteins in ascitic fluid of a patient in long continued heart failure to be 2.5 grams per cent. In a period of four weeks, we removed 18,000 cc. of ascitic fluid from this patient. This was a great protein loss and with a high protein diet the blood protein remained below 6 grams per cent. It is probable that during forced diuresis there is a loss of proteins, vitamins and minerals as well as a loss of fluid. Recently, starvation diets were administered to 34 men volunteers at the University of Minnesota. These diets contained 49 grams of protein daily. There was an edema produced in all 34 of these cases while subsisting for six months on this diet.[24] Their clinical state closely resembled that seen in Europe in 1945. The plasma protein concentration fell only slightly and the albumin globulin ratio remained within normal limits. There were no signs of renal or cardiac failure in any of these patients. Clinical edema vanished during three months of refeeding, and at the same time the plasma protein concentration returned to normal. This investigation done at the University of Minnesota would indicate that the famine edema is not simply the result of hypoproteinemia, or of renal

or cardiac failure. It is possible, however, that we will have to revise our estimates of what constitutes an adequate daily protein intake. Recent studies in the field of amino acids indicate that we should begin to think in terms of specific amino acid deficiencies and also to speak of blood proteins in terms of alpha beta and gamma globulin and albumin.[22, 6, 24, 25]

The usual recommended amount of protein is the same as that given for normal nitrogen balance: 1 gram per kilo body weight or between 40 to 60 gms. daily. We use 60-80 grams as a minimum; where there has been evidence of undernutrition, 100 grams daily are given. The total caloric intake will vary between 1,000 to 1,500 calories per day. Protein supplements may be added to the diet to improve both the quality and the quantity of the protein. Where there is an associated anemia, liver extract or folic acid may be added, administered orally or intramuscularly.

In the treatment of coronary thrombosis, we believe that the diet should be liquid or semi-liquid; 800 cc. milk and 6 oz. of citrous fruit juice, tomato juice, jello or broth for the first 36 hours. After the shock period has passed, a soft diet is better for about two weeks. We keep the caloric intake at 900 to 1000 calories with 60-70 gms. of protein, 150 gms. of carbohydrate and very little fat. Master, Joffe and Dock[2] find that undernutrition is desirable for patients with coronary occlusion, but we feel that undernutrition is desirable only for the first two weeks, unless the patient is overweight. If the patient is overweight, the low caloric diet with adequate protein may be continued for a longer period. If, however, he is a thin individual or of normal weight, the diet may be increased to 1500 calories, being careful to exclude all gas-producing foods such as cabbage, cauliflower, radishes, onions, beans, pork, etc. If milk is not well tolerated, it may be boiled or dilute hydrochloric acid, 20-30 drops, may be taken in fruit juice or buttermilk.

For many years we have been interested in nutrition and its relation to rheumatic fever. For the past five years, our experience has included all patients admitted to Mercy Hospital suffering from rheumatic fever or rheumatic heart disease. These patients have numbered over 500. From our observations, we believe that the most important part of the treatment in rheumatic fever depends upon rest, high protein, high mineral and high vitamin diet. This diet is supplemented with codliver oil and other vitamins when indicated. Ultra-violet therapy and sun bathing are emphasized. The recurrence rate among these patients has been very low.

The following evidence indicates that inadequate diet and the lack of sunshine are the most important predisposing factors in the causation of acute rheumatic fever:[35]

(a) The incidence of acute rheumatic fever and rheumatic heart disease increases as exposure to the sun decreases.

(b) Very low incidence of rheumatic infection exists in those countries which have an abundance of proteins and fish oils in the diet.

(c) The incidence of rheumatic infection is lowest in the private schools, next lowest in the rural schools and highest in the public schools.

(d) Poverty, and not dampness, is the predisposing factor.

(e) Holland, with a cold, damp climate, shows a low incidence of rheumatic heart disease.

(f) Those states in the United States which are primarily farm and dairy states have a lower incidence of the infection of rheumatic fever than those states which are largely industrial, or whose chief crops are cotton, tobacco and similar produce.

(g) A study of 76 patients with rheumatic heart disease and acute rheumatic fever reveals that the average size family is 7.5 persons per family. This indicates that persons in low income groups with large families have to spread the milk, butter, eggs, meat and fresh vegetables "too thin."

(h) There have been very few recurrences of active infection when families have cooperated in the correction of diets and in the addition of cod liver oil to the diet.

(i) Studies of the vital statistics, 1910 to 1940, show that the death rate for rheumatic fever follows the same tendency as that of tuberculosis, namely, a downward trend with improvement in economic conditions and education. Both of these diseases are primarily diseases of poverty.

(j) Poor dietary habits have been found to exist among those with adequate financial means. This condition was revealed by our method of dietary survey, using charts.

(k) Those races having much skin coloring are more susceptible to rheumatic fever when taken to climates having less sunshine than that to which they are accustomed; they also have a more virulent form of the disease.

(l) Seasonal variation is noted in the incidence of the disease, being more common in the winter and spring, following a period of inability to benefit from exposure to the sun.

(m) Those people who live in high altitudes, because of cold climate and a consequent lack of body exposure to the sun, have a higher incidence of rheumatic infection when they do not compensate for these deficiencies by increased quantities of Vitamin D.

(n) Immunologic studies among the Eskimos show that there is a natural immunity after the age of twelve to scarlet fever, diphtheria and also to filtrates from rheumatic fever patients.

(o) Recent studies by Raab[27] indicate that Vitamin D and other substances with the phenanthrene ring have anti-bacterial action.

Finally, it is my belief that this deficiency, which closely follows the incidence of clinical rickets, alters the individual's immunity to the infective organism that produces the clinical picture of acute rheumatic fever. The importance of adequate amounts of Vitamins A and D, milk, protein and the value of sun bathing cannot be overemphasized in the prevention of this

crippling disease and its recurrences. Adequate nutrition is shown to be necessary, not only in extending life in hearts crippled by degenerative changes but also in cardiac failure and the prevention of rheumatic fever and rheumatic heart disease.

BIBLIOGRAPHY

1. Benedict, F. B., Miles, W. R., Roth, P., and Smith, H. M.: Human Vitality and Efficiency under Prolonged Restricted Diet, Publication 280, Carnegie Institution of Washington, 1919.
2. Master, A. M., Joffe, H. F., and Dock, S.: Undernutrition in the Treatment of Coronary Artery Disease, J. Clin. Investigation, July 1936, 15:353.
3. Proger, S. H., and Magendantz, H.: Effect of Prolonged Dietary Restriction on Patients with Cardiac Failure, Arch. Int. Med., Vol. 58, No. 4, Oct. 1936.
4. Sprinz, Helmuth: Malnutrition, M. Clin. North America, March, 1946.
5. McHenry, E. W.: Thiamin Requirement of Man and the Bread Problem, School of Hygiene, Univ. of Toronto, Canada. M. A. J., Vol. 52, No. 2, 1945.
6. Weiss, Soma: Heart and Deficiency Diseases, Diagnosis and Treatment of Cardiovascular Diseases, Stroud, 1259-1291, 1946, F. A. Davis Co.
7. Cannon, P. R.: Antibodies and Protein Reserves, J. Immunol., 44:107-114, 1942.
8. Cannon, P. R., Chase, W. E., and Wissler, R. W.: The Relationship of the Protein Reserves to Antibody Production, J. Immunol, 47:133-147, 1943.
9. Feil, H.: A Clinical Study of the Electrocardiogram and of the Phases of Cardiac Systole in Pellagra, Am. Heart J., 11:173, 1936.
10. Mainzer, F., and Krouse, M.: The Electrocardiogram in Pellagra, Brit. Heart J., 1940, 2:85.
11. Smith, D. T., Ruffin, J. M., and Smith, S. G.: Pellagra Successfully Treated with Nicotinic Acid: A Case Report, J. A. M. A., 109:2054.
12. Rochnilewitz, M., and Braun, K.: Electrocardiographic Changes and the Effect of Niacin Therapy in Pellagra, Brit. Heart J., April, 1945, Vol. VII, No. 2.
13. Leary, T.: Genesis of Atherosclerosis, Arch. Path., 1941, XXXII:507.
14. Hueper, W. C.: The Etiology and the Causative Mechanism of Arteriosclerosis and Atheromatosis, Medicine, 1941, XX:397.
15. Root, H. F., Bland, E. F., Gordon, W. H., and White, P. D.: Coronary Atherosclerosis in Diabetes Mellitus, J. A. M. A., 1939, CXIII:27.
16. Friedman, G.: Cardiovascular Status of Diabetic Patient after the Fourth Decade of Life, Arch. Int. Med., 55:371-397, 1935.
17. Nothanson, M. H.: Coronary Disease in 100 Autopsied Diabetics, Am. J. M. Sc., 183:495-502, April, 1932.
18. Bruger, M., and Rosenkrantz, J. A.: Arteriosclerosis and Hypothyroidism, Observations on Their Possible Interrelationships, J. Clin. Endocrinol., 1942, II:176.
19. Shaffer, C. F.: The Nutritional Role of Cholesterol in Human Coronary Arteriosclerosis, Ann. Int. Med., June, 1944, Vol. 20, No. 6.
20. Huber, M. J., Broun, G. D., and Casey, A. E.: Prevention of Cholesterol Arteriosclerosis in the Rabbit by use of Pancreatic Extract (Lipocaic), Society for Experimental Biology and Medicine.
21. Dam, Henrik: Ineffectiveness of Vitamin E in Preventing Cholesterol Deposition in the Aorta, J. Nutrition, 1944, 28.
22. Bruger, Maurice: Experimental Atherosclerosis, Effect of Vitamin E, Proc. Soc. Exper. Biol. & Med. 59:56-57, May, 1945.
23. Cannon, P. R.: Dietary Essentials in Relation to Tissue Synthesis, Porter Lecture, U. of Ks. Med. School, March 4, 1947.
24. Keys, Taylor, Michelsen, Henschel: Famine Edema and the Mechanism of its Formation, Science, May 31, 1946.
25. Sahyun, M.: Nutritional Significance of Amino Acids and Proteins, Am. J. Digest. Dis., Vol. 12, March, 1945.
26. Krebs, Edwin G.: Depression of Gamma Globulin in Hypoproteinemia Due to Malnutrition, J. Lab. & Clin. Med., Vol. 31, No. 1.
27. Raab, W.: Antibacterial Action of Phenanthrene Related Substances, Science, May 31, 1946.
28. Ellinger, P., and Shattock, F. M.: Nicotinamide Deficiency after Oral Administration of Penicillin, Brit. M. J., 1946, 2:611.
29. Hardwick, S. W.: Nicotinamide Deficiency Precipitated by Sulfaquanidine, Lancet, 1946, 1:267.

30. Proger, Samuel H., and Magendantz, Heinz: The Effect of Certain Specific Dietary Factors on the Circulation in Patients with Health Disease, J. Clin. Investigation, 1937, 16.
31. Futcher, Palmer H., and Schroeder, Henry A.: Studies on Congestive Heart Failure, Impaired Renal Excretion of Sodium Chloride, Am. J. M. Sc., Vol. 204, No. 1, July 1942, No. 844.
32. Wheeler, Bridges & White: Diet Low in Salt in Heart Failure, J. A. M. A., Jan. 4, 1947, Vol. 133, No. 1.
33. Master, A. M., Stricker, J., and Dock, S.: Effect of Undernutrition on Cardiac Output and Cardiac Work in Overweight Subject, Arch. Int. Med., 1942, 69.
34. Schott, A.: Cardiovascular Disturbances Due to Vitamin B_1 Deficiency, The Practitioner, Jan. 1945, No. 919, Vol. 154, No. 1.
35. Peete, Don Carlos: Rheumatic Fever Diet as a Predisposing Factor, Ann. Int. Med., July 1944, Vol. 21, No. 1.
36. Longsworth, L. G.: Recent Advances in the Study of Proteins by Electrophoresis, Chem. Rev., 30:323-40, 1942.
37. Schemm, F. R.: A High Fluid Intake Regime in the Management of Edema, Journal-Lancet, 66:50-54, February, 1946.
38. Martin, A. J. P., and Moore, M.: Some Effects of Prolonged Vitamin E Deficiency in the Rat, J. Hyg., 1939, 39:643.

Mr. Isidore Greenspan, Executive Director of the Brooklyn Hebrew Home and Hospital for the Aged celebrated twenty-five years' association with that Institution on May 1, 1947. From a Home of 109 beds, growth has been continuous and rapid so that today the Institution comprises a Home and Hospital for chronic seniors with a bed capacity of 711. Progress is still apparent in view of the plans for construction of a new 400-bed structure and modernization plans of the older properties.

To see how short life is, one must have lived long. *Schopenhauer* (1788-1860).

GERIATRICS CONTACTS OLD AGE ASSISTANCE

Edward L. Tuohy, M.D.

THIS report and analysis originated from a recent experience as one of the panel speakers at the Center for Continuation Study at the University of Minnesota in Minneapolis. The attending group was made up from the Hennepin County Welfare workers administering Old Age Assistance. In the area represented by this group about eleven million dollars a year is expended independent of administration costs. This is given out to 26.2 per cent of those over 65 years of age residing in Hennepin County.**

It is well for doctors to better realize the scope and extent of Old Age Assistance, not only for the medical problems but also in the social and economic connotations that arise from an analysis of this necessary welfare problem. This population unit (Hennepin County, Minnesota) may be looked upon as representative of our country's north mid-section states. It is a region where people are living close to great food production areas. Minneapolis is especially representative of many desirable American cities that have grown rapidly by the influx of people from the farms, rural communities and villages. At the turn of the century approximately 60 per cent of our national population was rural. It is probable that the figures are quite reversed today, with great concentrations of population in industrial centers, so that about 40 per cent is represented by farmers or those catering immediately thereto. Movements from the farms to the cities stem from the availability of less and less productive farm areas that may be cheaply acquired. As the age level of a farming population advances, the older folk move or migrate to give place for their children. Some in the younger age group desire the educational facilities of large centers for their college-age children. Further trekking to the cities is, of course, augmented by the added industrial activity, such as that created by war and industrial expansion—higher wages or salaries, fixed hours of employment. All these factors beckon many away from the less productive farm; and inept or unskilled farmers just drift around like Steinbeck's "okies."

At this juncture we may well ask, "What is happening to our great industrial urban centers?" Some war industrial plants, for example, are converting into units to manufacture the alluring array of products that has come to give this, our time, the designation "a gadgeteering age." Such

*From the Department of Internal Medicine, The Duluth Clinic, Duluth, Minnesota.

**The total population for Hennepin County is about 565,000, with about 13.5% outside Minneapolis city limits.

READ before the annual meeting, American Geriatrics Society, June 7, 1947, Atlantic City.

EDWARD L. TUOHY, M.D., is Chief of Laboratories, St. Mary's Hospital, Duluth; guest lecturer, University of Minnesota Center for Continuation Study.

employment may be seasonal, and easily interrupted by economic adversity; but for whatever purpose people leave the farm, they seldom return to agricultural work. Workers 60 years and older in industry, once separated from a regular job, find their chances of satisfactory re-employment steadily decreasing. Material, physical or mental handicaps and inadequacies lead to early requests for welfare aid and counsel. Women who have entered into industrial employment have an even more unsettled outlook. This trend develops despite any state or national plan of unemployment insurance or Old Age Assistance. These worthy movements, usually intended as temporary expedients, become permanent institutions, and invite the cynical comment that "the legal state becomes a welfare state." Individual dependency is further encouraged by making the family a less independent unit. The welfare workers told us that they were having more and more difficulty in getting individual families to underwrite their less fortunate relatives. Divorce is mentioned by all welfare agencies as a factor promoting family disunity far beyond the two principals involved. Children of divorcees face the conflicts that stem from divided loyalties. They are apt to accept guidance from neither parent, and early memories of quarrels and disagreements instead of implanting a love of domesticity promote cynical and skeptical attitudes toward family responsibilities.

From many sources, therefore, we see trends that are processing a segment of our youthful population bent on living only by the month or year. Habits of thrift or preparation for old age are discounted as archaic and outmoded. Confusion, instability and frustration are the lot of all too many materialists. Pioneer farms promoted consolidated family life. There was work as well as need for every member of the family. I am not attempting to imply that were the farm people to remain on the land that all would be well for our nation. I do maintain that the trek away from farms has been too precipitate. A great work is being done by the 4-H clubs and farm bureaus. Properly managed co-operatives are building up the social standing and the group solidarity of farmers. Customs, habits, traditions—mores, develop slowly, but are very readily disrupted. We continue to laud the civilizing and cultural role of the home, but the present housing developments in our urban centers make almost no provision for the elderly derelicts and relatively few become comfortable hermits. Nevertheless, the Hennepin County welfare workers state that among those receiving old age assistance "30 per cent lived alone; 47.7 per cent were widows . . . many have outlived all their relatives." We have, therefore, even in our great country, something of a problem of "displaced persons."

EARLY CHILDHOOD CARE CONTRASTED WITH THAT OF LATE SENESCENCE

Within this orbit of population maladjustment, the aged are in greater jeopardy than are children. It is natural to yield them precedence where severe economies are practiced. They display amazing resiliency; they grow

out of situations adverse to their economy. The outlook for the aged offers a striking contrast. They are going into dependency rather than away from it. They also need love and affection and a sense of being useful and wanted even as do children. Nevertheless, they carry over into the older age rigid attitudes that often clash with younger people seeking in their own generation to accomplish independent lives and social adjustment according to their own standards. All too many older people have not made it a part of their life plan to "grow old gracefully." Those with considerable capacity seek most of all a chance to display their abilities, and clamor for work; where their spirit has been broken or dissipated they are equally eager to establish their dependency, and secure from O. A. A. everything they have coming to them and a little more. The difficulties faced by those administering to O. A. A. and the medical situations that arise as a part of Relief may be well adjudged by a summary of some of the questions posed by the welfare workers to this panel. We were told that in Hennepin County "$40 a month is available, but in addition we may give any type of medical aid needed for the aged for which public facilities are not already available." Some workers mentioned that many elderly prefer to press a demand based upon disease or disability because of the added aid that could be forthcoming. The pensioner soon learns that food, housing and clothing are more basic than money.

DAILY PROBLEMS PRESENTED TO WELFARE WORKERS IN OLD AGE ASSISTANCE

1. WHAT HAPPENS PHYSICALLY AND MENTALLY AS ONE GROWS OLD? This question clearly shows that intelligent lay people are aware of the need of studying age as a process instead of a disease. It was comforting to tell these social workers that the new science of geriatrics, with a journal devoted to its elucidation, was an evidence that doctors at least appreciate the penetrating insight this question connotes. They were also pleased to accept assurance that despite all the physical deficiencies and mental aberrations commonly encountered in their aging clientele—none of these developments was *per se* attributable to the normal and orderly ripening of the individual organism as routine senescence exhibits. I mention this because several of the younger women workers (chiefly wives of G. I. university students and themselves college graduates) told me later that a glum recital of the fateful disasters encountered among the aging burdened their souls with a deadening disillusionment. What does life hold forth if it only ends up in aching qualms and custodial living!

Studies by nutritionists among the starved refugees of this war report "early fatigue, forgetfulness and failure to acquire recuperation from sleep." This is comparable to the decrease in vigor, zest for work or play and general feeling of unfitness that follow excesses, the lack of sleep and faulty eating, so commonly experienced by the aging. It is the obvious reason why orderly habits of living and eating are so important for them.

Today the best trades craftsmen (carpenters, painters, plumbers and

watch repairmen) are over sixty years of age. The answer is obvious; younger men are not being apprenticed in these trades. The O. A. A. workers do not see exhibited among their clientele the worthwhile reserves of endeavor that frequently survive in older age, even in the presence of decisive physical disability. Consider for a moment Toscanini with his wretched eyes; Beethoven with his equally defunct ears; Verdi, writing his best operas after 80; recall the masterly chiselling of the ageling Michael Angelo, and consider our own more recent "elder statesmen" Baruch and Byrnes, and also Ford and Edison. Abundant examples are about us of old age demonstrating a ripening process—the fruits of adventure, enterprise, leadership, inventiveness and understanding, perennially re-endowing the race.

2. WHAT RELATION DO THESE CHANGES HAVE TO BEHAVIOR? Not nearly as much as is usually implied. People bring into old age that quota of accommodation and insight which was theirs by inheritance and by sane cultivation of habits, skills and general resources. A mental case or an alcoholic at 45 is apt to be the same at 65 or 70. The same goes for constipated food faddists, the digestive neuroses, and a series of nervous breakdowns, exhibiting an inability to face the issues of life with successful adjustment.

3. WHAT IS BEING DONE FOR THE PHYSICAL AND MENTAL DISABILITIES OF OLD AGE?

(a) *Exodontia, artificial dentures.* Since an adequate nutritional balance is one of the best safeguards for promoting efficiency in age, and since half our population over 50 has artificial dentures, it is vital to insist that these be made comfortable as well as serviceable. However, many cannot be made comfortable no matter how many changes are tried; the jaws and mouth of some people do not accept dentures with comfort. The chief trouble stems from promising patients with emotional or nutritional inadequacies caused by their teeth. The hot throat of the psychoneurotic with a globus; the tender palate, lips and mouth (perleche) of avitaminosis and anemia; the painful, sore tongue of pernicious anemia; the gingivitis of diabetes—these and many other constitutional disorders are not excluded by dentists relying upon the judgment of referring doctors. The blame, therefore, belongs to the medical profession in good part. The experience of three decades of ill-advised tooth extractions is presently correcting itself. In the meantime, toothless old people proclaim the crying need for more dental research both in terms of tooth caries and pyorrhea alveolaris. Recall Hooten's dictum that toothbrushes and toothpaste preserve teeth in about the same proportions that shoebrushes and polish preserve our shoes.

(b) *Braces, Splints, Belts and Artificial Limbs.* We need only to recall the very high incidence of chronic illness late in life, grouped under the general heading of "Arthropathies." I prefer not to attempt any definite answer to this very practical subject, but to comment upon the very able rehabilitation program which has been carried on in our military hospitals

in terms of those wounded in war. As a by-product of this rehabilitation program we must have now among us many highly-trained men and women capable not only to meet the physical but also the mental and psychological adjustment problems which the welfare workers must contend with and for which they need practical advice and help. I need not add that experimenting with expensive braces or artificial limbs (as commonly needed after amputation and has become necessary in diabetes or peripherovascular disease) presents even greater problems than do the sequelae of poliomyelitis in the young or that of the war amputees suffering their catastrophic infirmity, but in the most resilient period of their lives.

(c) *Emotional Problems Following Disabilities.* The problem of "psychosomatic medicine" is probably no greater among those with serious disease than it is where the disorders prove on extensive examination to be functional or based only on physiological perversion superinduced by emotional conflicts: fears, anxieties and thwartings. Skilful physiotherapy may at times be very helpful; psychological retraining is a long, tedious process. We could tell the workers a great deal about this problem, but I fear very little which they could use in their daily work.

(d) *Unsatisfactory Hearing Aids.* We might ask, "Why do so few doctors interest themselves in the problems of hearing loss until marked degrees of deafness obtain?" We do not speak of blindness until vision is lost. The problem of glasses seems well managed. Why is it not feasible to bring the rehabilitation of the totally deaf into closer association with the excellent work being done by the associations for the blind? The early training of lip reading, if no other method is available, to release these unhappy folk from their isolation should be taught at an earlier age, and when the process of deafness is developing rather than when it is complete. Early deviations from good vision are given attention. Perhaps after more is known about various types of hearing loss, aurists will be in a better position, through cooperation with manufacturers, to pick out types of hearing aids that are individually indicated. Endowments should be sought, not only for research along these mechanical lines but also to help out those needing these devices, rather than put them to the trouble and expense of individual exprimentation. Then, we must recall that those losing their hearing develop rather extraordinary psychogenic imbalances that not only interfere with their capacity to work but with their environmental and social adaptation. At this writing, hearing aids are better adapted to home use than for ordinary working men, especially when employed where noise, vibration and confusion upset the mechanics of hearing device and tire the user.

(e) *Common Skin Ailments.* I requested the social workers to read the scholarly review by Professor Stephan Epstein,[1] mentioning also that dermatologists ask every patient with a diffuse skin eruption, "What medicine have you been taking lately?" Soon thereafter they inquire into the emotional unrest that so frequently leads them to the diagnosis of a

"neurodermatitis." This is often a surprise to the elderly individual, who is sure that he is harboring some violent contagion or a systemic evidence of cancer!

4. INSTITUTIONAL PLANS FOR PATIENTS. The two questions most frequently asked by social workers are: "Where do you draw the line between mental incapacity stemming from senility and that from insanity?" and "What should our staff look for in rest homes?" Both of these questions may receive at least a partial answer from our experience in the two 300-bed private hospitals in Duluth, Minnesota. At the height of the war-hastened hospital congestion, a census showed approximately 50 "infirmary type" patients in St. Luke's and St. Mary's hospitals respectively. These chronic illnesses arise for the most part out of the late sequelae of cardiovascular disease—failing hearts and strokes, the late stages of cancer, the chronic arthropathies, and the senile individuals for whom modern servantless homes lack facilities for their care. The young and middle-aged women in these households are otherwise employed, and prefer not to interrupt their work to care for these patients, and sympathetic physicians enter them into beds sorely needed for acute medical illnesses or surgical care.

As to "rest homes," we have several very adequate and well-managed homes, capable of accommodating 5 to 15 patients. Minnesota adequately licenses and supervises these homes. Their efficiency is, of course, determined by the motive that leads competent nurses or matrons to assume this arduous management. I am told that as these homes pass into the hands of those aiming to profit materially thereby, increasing living costs automatically depreciate the service. It is possible for such rest homes to accommodate a fair number of ambulant, reasonably competent people (sometimes married couples) capable of some degree of self care. However, there is a much greater need in our midst for more ample care; and we hope to see our two hospitals add 150 beds each (with public aid) to take care of this infirmary patient group. Indigent infirmary patients treated in private hospitals will not be denied state aid; and they can associate with those paying all or part of their way. This avoids the social stigma of "poor-house lodging." At the same time, all the services (social, scientific, dietetic, central buying and auditing of modern highly-technical hospital management) will be juxtaposed and available. The plan is maturing and cannot fail to be helpful in many ways. I sketch a few items: The main hospital beds keyed-up for "short-stay" patients will not be usurped by "long-stay" people for whom constant nursing and medical care are neither needed nor profitable; infirmary care may be made less expensive and medical service may be handled in part by the hospital personnel, with the advantage the service offers to residents and fellowship men; and, of course, a simple corridor should connect this infirmary with any and all diagnostic, therapeutic or surgical emergency service.

As a result of the lack of facilities for these "infirmary patients" there

now obtains a most unnatural crowding of our state institutions. Among the aged this involves our mental institutions. A plan such as I am outlining would give a well-balanced hospital staff more time to adequately study individuals with mental aberrations before directing them to our hospitals for the insane and taxing the overworked nursing and medical staffs. The treatment of the established psychoses is no longer custodial and routine. Wherever the infirmary type of patient is treated, it is possible to recognize degrees of deterioration, whether physical or mental, for which merciful care, lending comfort and rest to a vegetative existence, outstrips the value of scientific tests or attempts at establishing optimum caloric intakes. In this sentence I have answered the question given us, "Is diet and personal hygiene as important as an understanding personnel showing warmth and understanding toward the aged?" The answer is most certainly yes.

DISCUSSION AND COMMENTS

It is true that 26.2 per cent of the people over 65 years needing old-age assistance in a city with no obvious slums, and in a period of unusual employment and prosperity may not be excessive; but does the problem end there, and what of the future? From the standpoint of numbers it is well to reflect upon what happened to our population in the decade 1930 to 1940: While the population increased 7.2 per cent, there was 5 times that increase in the age group 65 and over, or a grand total of 35 per cent! Few readers can afford to miss the masterly outline and essay by Hinman,[2] "The Dawn of Gerontology." You will see that I have unequivocal support in some of the inferences which I have been outlining in terms of my recent experience with these workers in old age assistance. This sample will make you wish to read the article: "The social status of elders is not satisfactory . . . age is not revered as formerly, but is just more or less tolerated . . . everybody dreads the thought of growing old . . . society contemplates giving everyone over 55 or 60 a pension for life. When medicine keeps people alive for another 60 or more years what a mob of dependents there will be then. Social security of the pension kind is *not at all the answer* . . . with no outlet for muscle or brain social security is unbiologic."

Stuart Chase[3] is another supporter of my contention that urban concentration of industrialists carries heavy penalties for the aging unless we gradually venture some living readaptation. Chase's comments are singularly intriguing because in yesteryear he was a great exponent of turning back the technological trend. Note this nostalgic comment: "There are no time clocks in the biological history of man . . . the machine, however, is a prodigious saver of man-hours per ton produced. *Homo sapiens* perhaps has had no choice but to follow the technological road. He is now too far along it to turn back. To retreat to the handicraft age would cost most of the population of America. And the atomic age has begun. But *homo sapiens* has not been happy in his factories. They have galled him, frustrated him, and often completely broken him."

As professional contacts have compelled me to try to comprehend what is happening to our American economy, I find the weekly grind of papers, books, broadcasts and magazines abundantly reflects the dilemmas involved in geriatric care. I have alluded to the inadequacies of urban homes and the lack of enthusiasm of women to work in the home. In an admirable article by Mrs. Cyrus,[4] an unsually intelligent college graduate, the mother of two children, she tells us clearly why the American home is falling apart: too much polishing of silver, eternal cleaning of house and children, and a total dearth of sitters!

No discerning reader should infer that I hold to the ancient and trite belief that woman's life and sphere of devotion and dominance should be in the home, and especially in a farm home. No argument is needed to establish the eminent need for home attachments, for childbearing and pre-adolescent rearing; and it is equally obvious that for older-age children the supervisory care and duties are equally oppressive; but with life extension what it is there remains that final third of average existence where the stabilizing influence of home and religious* ties redounds to the making of a desirable and peaceful state. We face the need of moulding feeling and opinion toward the aging; a salvaging of values resident within the group, as many have pointed out; an attempt to prove that human life is not confined to biological attributes, as illustrated by domestic animals, but that to humanize the race we need the influence of grandparents on grandchildren and their associates, in order that we may develop well adjusted citizens. It looks as if we are going to be forced to accept a certain degree of collectivism, economic and industrial, in order that men, women and children may share in a broadened life—*and that means its entire span.*

It is well for us to review the general direction of our loyalties; it may help us to focus upon our duties, the neglect of which may prove our undoing. Two distinguished writers have recently used the same expression, "The anatomy of loyalty": Guy Tugwell, in discussing his difficulties in building up more production in turbulent Puerto Rico, and keeping his lines cleared with Washington; and E. B. White, pleading with the same expression for some degree of world government, symbolized by "a wild flag" (an iris flower)—each nation yielding some of its sovereignty. Total national independence connotes that isolation we seem indubitably forced to abandon. In our individual lives we appear to face decisions that are just as difficult. These decisions involve the home, children, the education for trades, vocations, professions, employment away from home for both men and women; the breakdown of the home as a fixed rendezvous for a life-time instead of a temporary period allocated to specific purposes. The medical geriatrist must step out of his role as a therapist to assist in solving the broader social and economic difficulties related to age.

*Napoleon is accredited with the cynical statement that "To the devout all religions are true; to the skeptic all are false; to the politicians all are useful."

REFERENCES

1. Epstein, Stephen: Dermatitis in the Aged, Geriatrics, 1, 369 (Sept. and Oct.) 1946.
2. Hinman, Frank: The Dawn of Gerontology, J. Gerontology 1:411 (Oct.) 1946.
3. Chase, Stuart: Examines Jersey's (Standard Oil) Labor Relations, The Lamp 28:7 (Oct.) 1946.
4. Cyrus, Della D.: What's Wrong with the Family, The Atlantic Monthly 178:39 (Nov.) 1946.

GERIATRICS—EPILEPSY IN OLD AGE

Madelaine R. Brown, M.D.

The aging of cells in the body is not due to disease but to a natural biological process. Epilepsy is thought to be an inherent, inherited abnormality of the nerve cells of the brain or, in other words, paroxysmal cerebral dysrhythmia. In the absence of cerebral injury from any cause, it would seem unlikely that the onset of cerebral dysrhythmia in the aged would be due to age alone. The case histories of two patients herein presented would seem to bear this out.

Case Histories

Case 1. A female patient, sixty-six years old, was admitted to the Nerve Clinic of Massachusetts General Hospital on November 15, 1945.

C.C.—Convulsion three to four weeks prior to admission. Information was obtained from her son as the patient has no memory of her seizures.

P.I.—Five years before admission the patient suffered from loss of consciousness and convulsive movements of the arms and legs early in the morning. She began to experience periods of loss of consciousness, lasting from two to five minutes, in which she did not fall but did lose contact with her environment. These came regularly every two or three days without headaches or convulsions. The convulsions occurred about once a year until recently. She had a seizure four months prior to admission and one four weeks before. She felt that her memory was worse after each convulsion.

P.H.—The patient was born in Ireland. Her husband and two sons are living and well.

F.H.—One brother had convulsions.

P.E.—The heart sounds were regular and there were no murmurs. Blood pressure was 120/70. The neurological examination was negative. Mental status was normal with the exception that recent memory was poor.

Laboratory—Urine: albumin 0, sugar 0. X-ray of the skull was negative for fracture or metastases. X-ray of the chest was negative. EEG showed a normal record but was ragged in the third minute of hyperventilation. Lumbar puncture: fluid clear, initial pressure 155 cc. of water, dynamics normal, 0 cells. Total protein: 22 mg. per 100 cc. Gold sol.: 0000000000. Wassermann: negative.

No medication was given. When the patient came to the hospital on January 11, 1946, she had been having brief episodes of loss of contact with environment almost daily. Dilantin in doses of 0.1 gm. three times a day prescribed. She continued to have psychomotor seizures. A month later she was given dilantin 0.1 gram four times a day.

Madelaine R. Brown, M.D., Assistant Neurologist, Massachusetts General Hospital; Instructor in Neurology, Harvard Medical School; Neurologist, Mt. Auburn Hospital and New England Hospital for Women and Children.

In December 1946 she came to the hospital and stated that her health was excellent. She had had no convulsions since coming to the hospital over a year before. Once she had left her bed in the middle of the night and started dressing, but otherwise had had no psychomotor seizures.

CASE 2. A male, seventy-two years old, first seen on June 1, 1946.

C.C.—Attacks of unconsciousness.

P.I.—The patient's daughter related that ten months previously, without warning, he had an attack in his sleep. He cried out. By the time the family reached him, he was insensible, his face was dark, and he was breathing stertorously. He was frothing at the mouth. They did not notice any twitching. He had now had six episodes all together, and if he had not fallen at the onset, there was no apparent ill effect. He did have one in the daytime, having been found on the floor by the mailman.

P.H.—He was born in Ireland and had been a letter carrier in Dover, New Hampshire, for thirty years. He had never seen a doctor. He has four sons and one daughter, all living and well. His wife died of asthma at the age of sixty.

F.H.—His father died in Ireland of typhoid. His mother died in Ireland of unknown cause. He has seven brothers and sisters. One sister had epileptic spells.

P.E.—Neurological examination: Fundi show little arteriosclerosis. Disc normal. Pupils small, equal, and react. Extra-ocular muscles negative. Rest of cranials normal except reduced air conduction left ear, bone conduction better. Tongue and palate negative. Extremities normal, reflexes equal and active. Blood pressure 105/90. Soft systolic murmur aortic area. Pulse regular, normal rate. Dullness over aorta. He had an EEG which was diagnosed by Dr. William Lennox as "normal 10½ per second EEG." He was given 0.1 gm. of phenobarbital every night before retiring. The patient was seen again on December 5, 1945.

The patient had no seizures until he stopped the phenobarbital August, 1946, when he went to the hospital for a prostatectomy. He was there eleven weeks and had two convulsions when in the hospital. He had had one two weeks ago at home. He then had memory loss, and his weight dropped from 180 to 172. He did not look as well as he did six months before. Nothing significant was found on neurological except some loss of vibration sense over the ankles. He was told to return to 0.1 gram phenobarbital every night.

In a letter dated January 14, 1946, his daughter said, "My father appears quite his old self. He takes the phenobarbital and has not had any seizures."

DIFFERENTIAL DIAGNOSIS

Neither of the patients described here had retinal arteriosclerosis, hypertension, glandular dysfunction, or Stokes-Adams disease. One had evidence of mild aortic stenosis. The children of both of these patients stated that their parents' recent memory had been poor since the onset of convul-

sions. On examination poor recent memory was found, but there were no abnormal neurological signs or psychotic behavior typical of Alzheimer's disease. The electro-encephalogram of one patient was normal and that of the other abnormal only after hyperventilation. It is likely that if they had markedly abnormal electro-encephalograms, they would have developed seizures earlier in life. Several observers have found that about 20 per cent of patients suffering from epilepsy have normal electro-encephalograms.

Incidence of Epilepsy in Old Age

Epilepsy as a cause of prolonged attacks of unconsciousness or convulsions in the aged should always be considered. Out of 1,450 patients in Gowers' series, four had convulsions that began when they were in their sixties and one in the seventies (1). Out of 6,595 patients admitted to the Craig Colony for Epileptics, 51 had attacks starting in the sixth decade, 16 in the seventh, and 2 in the ninth and tenth (2). Sympson (3) reported that out of a series of 172 patients, only 2 had seizures beginning after they were forty-five years old, which would seem to belie his quotation that epilepsy begins most commonly at three epochs of man's life: teething, puberty, and old age. From the figures given above there was a gradual decrease through adult life. A correction for population age would modify them somewhat.

Evidence That Epilepsy is Probably Inheritable

Gowers states that the father of his patient whose convulsions began after he was seventy, had had epilepsy for many years (1). Lennox, Gibbs, and Gibbs (4) studied the electro-encephalograms made from relatives of epileptic patients and of a control group. Fifty-four per cent of the former and only 6 per cent of the latter showed abnormal tracings. They conclude that cortical dysrhythmia is probably inheritable and, to confirm this, studied fifty twin pairs affected by seizures (5, 6).

Summary

The case histories of two elderly patients suffering from convulsions have been given. One was sixty-one, and the other seventy-one years of age when the seizures started. Each had a sibling who suffered from epilepsy.

The symptoms of idiopathic epilepsy may begin at any age, but the probable cause lies in an inherent dysrhythmia of the cerebral nerve cells.

References

1. Gowers, W. R.: Epilepsy and Other Convulsive Diseases. London: W. A. Churchill, 1881, pp. 14017.
2. Talbot, Fritz: Treatment of Epilepsy. New York: MacMillan Co., 1930, p. 12.
3. Sympson, E. M.: Remarks on Senile Epilepsy. Brit. M. J., 1:1069, London, 1894.
4. Lennox, W. G., Gibbs, E. L., and Gibbs, F. A.: Electro-encephalogram in Relatives of Epileptics, J.A.M.A., 113:1002, Sept. 9, 1939.
5. Lennox, W. G. and Gibbs, E. L.: Twins, Brain Waves and Epilepsy. Arch. Neur. & Psych., 47:702, April, 1942.
6. Lennox, W. G.: Fifty Twin Pairs Affected by Seizures. Assn. Research in Nervous & Mental Diseases, Dec., 1946.

CANCER IN THE AGED*

COMMENTS BY A ROENTGENOLOGIST

It is fortunate that you asked about cancer in the aged rather than cancer in the aging. For then I could have included the cancer of the aging. This would have included that large group of cancers in the womb and the breast that takes a large toll in women between the ages of thirty-five and sixty. I can limit my remarks to cancer in those over sixty-five chronologically, but they are bound to include many who are only sixty-five in the flesh and the spirit.

Did you ever stop to think that squamous cell cancer, which is particularly brutal and aggressive and metastasizing, rarely occurs in the aged? It is the basal cell growths, the adenocarcinomas, the glandular cancers that afflict the aged.

Rarely does a woman past the menopause have a squamous epidermoid carcinoma of the cervix. She has an adenocarcinoma of the uterine body. No cancer of the prostate is other than adenopathic. All cancers of the gastrointestinal tract, excepting the lips, oral cavity, and anus, are adenocarcinomas. The sarcomas and lymphoblastomas of the stomach and bowel are too few for statistical worry. But adenocarcinoma of the stomach, colon, rectosigmoid, and rectum are the undisciplined "tar-babies" of nature's sewer system.

Fortunately, adenocarcinomas are slow-growing and they metastasize late. They are rarely wild growths but develop at an orderly pace to which in many instances the host accommodates himself. The time-space factor of growth in the adenocarcinoma of the stomach, colon, and rectum is usually in advance of the disturbing symptoms and loss of weight. Although there are preclinical conditions and symptoms for most squamous cell growths, there is not a single, clinically guaranteed symptom, premonition, or crystal-gazing thought that warns the future host of a lethal adenocarcinoma of his feeding apparatus or intestines. For years I have listened to adventurous belly surgeons talk about vagaries of the appetite, discuss changing stool habits, castigate cathartic regimes, and extol the values of X-ray meals and of sprinkling the colon with opaque barium. Yes, these and many others are allegedly useful symptoms and examinations. But when it comes right down to the operation, and more particularly to the operative statistics, the poor patient never comes early enough. Of course, refined X-ray studies are theoretically useful; but what elderly person is going to have the money or the inclination to indulge in these?

Pardon me for the intrusion of this piece of simple logic. The only way for an inaccessible, nonvisible cancer to be found at an early stage, is for the family doctor—not the clinician, the internist, or the specialist—but the family doctor, to be suspicious of cancer before he can ever start to diagnose a cancer that is hidden from direct or accessible vision. You must

*The author of this article, a distinguished midwestern roentgenologist, has requested that his name be withheld.—Ed.

have a high index of suspicion before you can diagnose anything excepting death.

One thing we must learn and remember is that cancer in the aged is not a disease of degeneration as are the diseases of the heart and circulatory system. Think of the varicose ulcers, the diabetic necrosis, the intracranial apoplexies, the chronic infections of the bronchial trees—all these are degenerative diseases. But adenocarcinoma of the stomach, colon, and rectum comes out of the blue, amidst business success, in the hale and hearty cattleman. A man may be starving to death, may have all kinds of circulatory and digestive complaints, or may have hemiplegia, Bell's palsy, or locomotor ataxia, but these degenerative, debilitating, and lethal situations will not themselves ever cause a cancer.

I sometimes think that cancers are the result of undue activity on the part of tissues rather than penalties of disuse or misuse, of infection, degeneration, or circulation. A uterus that was made to harbor and nourish a baby never got pregnant, and so this womb decides to do something for itself; what results—a fibroid. The adolescent who plays hard and gets a rap on the thigh bone or tibia that is not severe enough to produce a fracture winds up with an osteogenic sarcoma. Why? Because the injury called out a lot of round cells sufficient to heal a fracture, and there was not a thing for these cells to do, so they decided to riot; what do we get—a cancer in bone of the most lethal sort.

Now let me tell you some of the good things about cancer in the aged. All these adenocarcinomas of the breast and womb in women over the age of sixty-five are slow-growing affairs. Of course, these tissues are still active and still socially useful except that they do not secrete or excrete hormones any more. These growths can last a long time, and therefore the host may die from a circulatory disturbance before she even knows she has a cancer. It becomes a fine point of distinction sometimes as to whether it will be better practice to let a patient wear a tumor comfortably and await the circulatory finale, or to cure the tumor and kill the patient in the process.

This brings me to another interesting point in these cancers of the aged. It is wonderful to be a snappy, incisive surgeon and to be able to delete a cancer without terminating the host. It is grand for the theoretical radiologist to deliver a lethal dose of radioactivity and kill the cancer. But what does he do with the debris or ashes of the cancer? Therefore, it is necessary to think about reducing the virulence or the rate of growth of a tumor, rather than trying to destroy it totally. It may be possible to make a growth stationary instead of letting it be progressive. It is always well to remember that it is much safer to have a stationary tumor in a live patient than a dead tumor in a dead patient.

ALLERGY PROBLEMS IN ELDERLY PERSONS*

Abner M. Fuchs, M. D.

An appreciable proportion of the population is allergic. Vaughan[1] has estimated that about 10 per cent of the population develops major allergic manifestations, while approximately an additional 50 per cent gives a history of minor allergic reactions. Cooke and Vander Veer,[2] considering only the regularly accepted allergies—allergic coryza, bronchial asthma, the urticaria-angiodema group and the allergic dermatoses—give about 7 per cent as their estimate.

The majority of allergic individuals begin to manifest their symptoms in the first three decades. With advancing age, the onset of symptoms becomes increasingly rare. It is a known fact that the hereditary predisposing factor will determine in a great measure the age of onset of symptoms. The heavier the allergic inheritance, the earlier the manifestations are likely to appear.[3] Senescence does not begin suddenly at any given age. It is not the age of the person that matters much, but rather the evidence of senescent changes. However, in general, the aging process may be considered to begin at the age of fifty.[4]

Although it is generally believed that with advancing age certain allergic diseases such as hay fever, migraine, and some dermatoses either spontaneously disappear or at any rate their symptoms become less severe, we find many individuals over fifty who, despite the development of their sensitizations at an early age, are still markedly allergic, and there are some who become allergic for the first time after fifty.[5] The great advances that have been made in preventive medicine and control of infectious diseases, especially with the sulfonamides and antibiotics, is shifting our population toward the older group.[6] As allergic manifestations may evidence themselves at any time in life, we cannot largely preoccupy ourselves with the younger group of patients and neglect the elderly group. Since the commonest expression of allergy in the elderly are nasal and respiratory symptoms, particularly asthmatic symptoms, a special study was made of the patients over fifty years of age who are now attending the Allergy Clinic of the New York Post-Graduate Medical School and Hospital. They are under treatment for either hay fever, bronchial asthma, or perennial allergic coryza.

---

*From the Division of Allergy, Department of Medicine, New York Post-Graduate Medical School and Hospital, Columbia University. W. C. Spain, M.D., Director.

Abner M. Fuchs, M.D., is Instructor in Medicine (Allergy), New York Post-graduate Medical School and Hospital, Columbia University; Instructor in Medicine (Allergy), New York Medical School; Chief of Allergy Clinics, Metropolitan and New York Post-Graduate Hospitals; Associate Visiting Physician, Metropolitan Hospital; Assistant Visiting Physician, Goldwater Memorial Hospital; Assistant Physician, New York Post-Graduate and Flower and Fifth Avenue Hospitals; Fellow, American Academy of Allergy.

Table I—HAY FEVER

No.	Name No.	Age	Age of Onset	Family History of Allergy	Type of Hay Fever	Class and Top Dose (P.N. Units)	Treatment			Complications and Reactions
							Dur.	Imm.	Res.	
1	G.G. B10888	58	12	−	Late	C 6000	11	R.	I.	
2	A.H. A15933	54	15	−	Late	C 5000	15	R.	I.	Asthma
3	K.M. E67008	55	17	+	Early and Late	C 5000	2	T.P.R. D.V.	I.	Sinusitis Nasal polypi Asthma
4	M.B. E84152	60	20	−	Late	C	1	PBZ	U.	
5	R.P. E56622	62	25	−	Late	B 2500	2	R.	S.	Constitutional reactions following 3000 and 2750 units
6	E.O. E42753	55	28	−	Late	A 6000	3	R.	I.	
7	F.W. A6969	64	28	−	Late	A 5000	15	R.	I.	Asthma Constitutional reaction after testing
8	R.S. A52316	65	28	+	Late	C 5000	14	R.	I.	Asthma
9	C.S. J27733	60	30	−	Early	C Trees 3500 T. 5000	10	Trees and T.	I.	
10	A.P. J93094	61	30	−	Late	C 6500	17	R.	I.	Asthma
11	E.P. E68840	51	31	−	Late	D 100	4 wks.	R.	U.	Treatment started during hay fever season. Co-seasonal treatment given.
12	J.M. 71803	61	33	−	Late	C 5000	16	R.	I.	Asthma
13	L.P. B39065	57	34	−	Late	B 5000	8	R.	I.	
14	A.R. A74117	53	35	+	Late	C 2000	14	R.D.O.	I.	Asthma
15	A.G. 75357	53	37	−	Late	B 2500	16	R.	I.	
16	I.B. 25848	66	37	−	Late	C 5000	19	R.	I.	Asthma
17	B.M. A8888	56	38	−	Late	A 400	13	R.	I.	
18	L.M. J91879	60	38	−	Early and Late	C 5000	10	T.P.R. D.V.	I.	
19	L.S. B52466	52	39	−	Late	B 2500	5	R.	I.	Asthma
20	C.E. 27032	58	39	+	Late	B 5000	9	R.	I.	
21	C.S. D73789	50	42	−	Late	B 3000	5	R.	I.	
22	M.R. E81314	51	42	+	Early and Late	C	1	PBZ	S.	
23	P.M. C74337	60	42	+	Late	C 5000	9	R.	I.	
24	A.M. J2438	58	44	+	Early and Late	B 2500	14	T.P.R.	I.	Asthma
25	B.W. D43523	54	45	−	Late	B 2500	6	R.	I.	
26	H.D. E64889	57	45	−	Early and Late	D 5000	2	T.P.R.	S.	Perennial nasal allergy
27	M.K. C12063	61	46	−	Late	C 5000	10	R.D.	I.	
28	A.P. A36258	53	47	−	Late	B 5000	3	R.	I.	
29	I.C. B15239	65	50	−	Late	C 6000	4	R.	I.	
30	I.S. D92446	61	56	+	Early and Late	C 5000	5	T.P.R. D.V.	I.	Perennial nasal allergy
31	R.L. E61739	65	61	−	Late	C 5000	2	R.	I.	Asthma
32	R.R. E4015	71	63	+	Late	C 6500	4	R.	I.	

Abbreviations used in Tables I, II and III
P.N., Protein Nitrogen; A.B.C., Degree of reactivity as indicated by intracutaneous testing, A, most sensitive and C, least sensitive; Dur., Duration; Imm., Immunization; Res., Results.
R., Ragweed; T., Timothy; P., Plantain; D., Dust; V., Vaccine; F., Feathers; O., Orris; K., Kapok; Ep., Epithelium; PBZ., Pyribenzamine. I., Improved; S., Slight improvement; U., Unimproved; B.P., Blood Pressure.

Aged persons may have hay fever symptoms. Although it rarely begins in old age, the symptoms may continue to affect elderly persons who developed them in early life. Of 222 adult hay fever patients attending the Allergy Clinic, (Table 1), 32, or 14.4 per cent were over fifty years of age. The oldest patient was seventy-one. The age of onset ranges from twelve to sixty-three years, and 28, or 75 per cent, of the older group with active hay fever had their onset of symptoms at a relatively late age, i.e., after thirty years. Only 4 patients, or 1.8 per cent, of all the hay fever patients, had symptoms for the first time after fifty, viz., at fifty, fifty-six, sixty-one, and sixty-three. Nine, or 28.1 per cent, of those over fifty gave a family history of allergy. For most of these patients the skin demonstrated a diminished activity on intracutaneous testing with pollen extracts. Only 3 of the 32 patients showed marked skin sensitiveness, Class A (Cases 6, 7, 17).

One patient, sixty-two years old (Case 5), had a constitutional reaction following treatment with the pollen extracts and another, sixty-four years of age (Case 7), experienced similar severe symptoms after skin testing. Eleven, or 34.4 per cent, of those over fifty had asthmatic symptoms in conjunction with their hay fever.

The treatment for the elderly hay fever patient is similar in every respect to that employed for the younger persons, and the same precautions for testing and treating these people must be followed. The 32 hay fever patients over fifty had been treated for from one to nineteen years, and the maximum dosage averaged 4,155 protein nitrogen units. The results following treatment with the standardized pollen extracts and, where indicated, with extra pollen sensitiveness was excellent in 27, or 84.4 per cent, of the patients. Slight improvement occurred in 3, or 9.4 per cent, and no improvement in 2, or 6.2 per cent. Two of the patients were treated with the antihistaminic drug (pyribenzamine) during the fall hay fever season of 1946. One of them (Case 4) had no relief, while the other (Case 22) experienced slight relief from his symptoms.

The most important allergic manifestation encountered in the elderly group of patients is bronchial asthma. Of 200 asthmatics over fourteen years of age attending the Allergy Clinic, (Table 2), 60, or 30 per cent, are over fifty, and the oldest is eight-four years. Eleven, or 18.3 per cent, of these patients are of the purely skin-sensitive type. Sensitization to specific allergens, such as pollens, inhalants, and foods, were demonstrated by skin tests or clinical trial. Twenty-seven, or 45 per cent, belong to the skin-negative or infective group. Their symptoms are the result of some infectious process in the paranasal sinuses, lungs, or elsewhere in the body. The remaining 22, or 36.7 per cent are of the mixed type in that they are skin-sensitive and have chronic respiratory infections. Ten of the 60 patients demonstrated marked sensitiveness on intracutaneous testing, and one patient, aged 62 (Case 8), had a constitutional reaction after testing. The

Table II—BRONCHIAL ASTHMA

No.	Name No.	Age	Age of Onset	Allergic Criteria	Foci of Infection	Treatment			Other Pathology and General Remarks
						Dur.*	Imm.	Res.	
1	E.T. E48090	62	5	Positive skin tests	Nasal polypi	2	D.V.	I.	B.P. 290/160 Highly sensitive
2	H.I. E49060	67	16	Hay Fever Positive skin tests	None	1	R.D.V.	I.	B.P. 174/90 Dyspnea on exertion
3	C.V. D31799	58	20	None	Sinusitis	2	D.V.	S.	B.P. 190/120 Colloid Goitre Cardiac
4	J.J. 70152	55	23	Hay Fever Positive skin tests	Sinusitis Nasal polypi	11	R.D.V.	I.	B.P. 158/90
5	C.B. D44415	52	26	Hay Fever Positive skin tests	Sinusitis Nasal polypi	5	R.F. D.V.	I.	B.P. 110/70
6	W.R. E64252	54	28	Hay Fever Positive skin tests	Nasal polypi	1	R.T.P. D.V.	I.	Highly sensitive Emphysema
7	I.S. J42483	60	28	None	Sinusitis Infected tonsils	6	D.V.	I.	B.P. 140/90 Cardiac
8	F.C. C2581	51	31	None	Sinusitis	10	D.V.	S.	B.P. 90/50
9	E.Z. D90269	62	33	Hay Fever Positive skin tests	None	4	R.D.V.	S.	B.P. 230/100 Highly sensitive Constitutional reaction after testing
10	J.A. 22190	54	33	Hay Fever Positive skin tests	None	17	R.T.P. D.	I.	Mild asthma in hay fever season
11	S.S. 64682	52	34	Hay Fever Positive skin tests	None	17	R.T.P. D.	I.	Perennial nasal allergy
12	R.S. E6951	58	36	Hay Fever Positive skin tests	None	3	R.T.P. D.V.	I.	Asthma worse in winter months
13	G.H. A95912	60	36	Hay Fever Positive skin tests	Sinusitis	12	R.O.D. V.	S.	B.P. 135/85 Cardiac
14	W.H. A91375	80	36	Hay Fever Positive skin tests	None	11	R.D.V. F.	I.	B.P. 120/60 Cardiac
15	T.K. A66649	57	37	Positive skin tests	Nasal polypi	3	D.V.F.	I.	B.P. 122/90 Urticaria
16	F.S. 3171	51	38	Hay Fever Positive skin tests	Sinusitis	7	R.T.P. D.	I.	B.P. 134/84 Asthma worse in summer
17	B.V. E42812	63	38	None	Sinusitis Nasal polypi	2	D.V.	U.	B.P. 170/90 Dyspnea on exertion Had nasal operation
18	B.R. J17019	56	39	None	Sinusitis	12	D.V.	I.	B.P. 170/110 Healed pulmonary tuberculosis
19	K.K. E72705	56	39	Hay Fever Positive skin tests Mother had asthma	Nasal polypi	2	D.V.O. K.	I.	B.P. 160/108 Highly sensitive Emphysema Cardiac
20	F.A. D60660	55	40	Hay Fever Positive skin tests	Sinusitis	5	R.D.V. F.	I.	B.P. 110/80 Highly sensitive Menopause
21	T.P. J84934	50	40	Hay Fever Positive skin tests	Sinusitis	3	R.D.V.	I.	B.P. 110/70 Highly sensitive
22	M.F. C11943	59	40	Positive skin tests	Sinusitis Nasal polypi	9	D.V.	I.	B.P. 155/70 Asthma worse in summer
23	S.D. C16717	50	41	Hay Fever Positive skin tests	Sinusitis	9	R.T.P. D.O.	I.	B.P. 110/60 Hay fever age 36 Perennial nasal allergy Migraine
24	F.F. D20665	50	41	Positive skin tests	Sinusitis	6	D.V.O. F.	I.	Asthma severe with sudden weather changes
25	B.A. B78674	54	42	None	Sinusitis	10	D.V.	I.	B.P. 124/80 Menopause
26	M.D. E30961	51	44	None	Sinusitis Nasal polypi	4	D.V.	S.	B.P. 110/70 Bronchiectasis
27	A.B. 73287	52	44	None	Sinusitis	3	D.V.	I.	B.P. 150/90 Menopause
28	J.P. C61099	84	44	Hay Fever Positive skin tests Two grandchildren have asthma	None	8	R.D.V.	I.	B.P. 134/80 Hay fever since childhood Cardiac
29	A.W. B33584	55	44	Positive skin tests Mother and sister have asthma Nephew has hay fever	None	10	R.D.	I.	B.P. 130/80 Highly sensitive Mild asthma during hay fever season Perennial nasal allergy
30	I.S. J42483	60	45	None	Sinusitis	6	D.V.	U.	B.P. 160/95 Cardiac; Highly emotional
31	Y.K. B26605	54	45	None	Sinusitis	8	D.V.	I.	B.P. 115/75 Dyspnea on exertion

Table II—BRONCHIAL ASTHMA (Continued)

No.	Name No.	Age	Age of Onset	Allergic Criteria	Foci of Infection	Treatment			Other Pathology and General Remarks
						Dur.*	Imm.	Res.	
32	R.F. E42613	62	46	Hay Fever Positive skin tests	Sinusitis	8	R.T.P. D.V.	I.	B.P. 134/96 Highly sensitive Hay fever age 18
33	G.G. C49830	56	47	None	Sinusitis	2	D.V.	S.	B.P. 150/96 Asthma worse in winter months Emphysema
34	D.L. E40049	54	49	None	Sinusitis Infected tonsils	2	D.V.	I.	B.P. 124/76
35	A.D. E42971	56	50	None	Sinusitis	1	D.V.	I.	B.P. 150/98 Bronchiectasis
36	S.P. E87973	51	50	Positive skin tests	None	1	R.T.D.V.	I.	B.P. 150/80
37	F.D. E72702	69	50	Positive skin tests	Sinusitis Infected tonsils	8	R.D.V.	I.	B.P. 130/80 Asthma worse in August and September Cardiac
38	E.S. B47650	60	50	None	Sinusitis	½	D.V.	I.	B.P. 140/90 Dyspnea on exertion, and in cold weather
39	E.A. E81769	53	51	Positive skin tests	None	3	R.T.P. F.O.D.V.	I.	B.P. 138/90 Highly sensitive Emphysema
40	L.W. C36518	54	51	None	Nasal polypi	6	D.V.	U.	B.P. 160/90 Cardiac Emphysema Asthma bad in cold weather
41	M.G. D20838	67	51	None	Chronic Bronchitis	11	D.V.	I.	B.P. 152/98 Cardiac
42	K.B. J79065	57	51	Positive skin	Chronic Bronchitis	3	R.D.V.	I.	B.P. 170/85 Cardiac
43	C.H. J2541	56	51	None	Chronic Bronchitis	10	D.V.	I.	B.P. 140/90 Cardiac
44	A.S. 82749	66	52	Hay Fever Positive skin tests	Sinusitis Nasal polypi	12	R.F.D.	I.	Highly sensitive Perennial nasal allergy
45	A.S. 3442	64	52	None	Chronic Bronchitis	1	D.V.	I.	B.P. 150/90 Cardiac Asthma worse during winter months
46	N.O. E76524	55	54	Positive skin tests	None	6	D.V.	I.	B.P. 164/90 Highly sensitive Perennial nasal allergy
47	I.S. D918	60	54	None	Sinusitis	½	D.V.	U.	B.P. 130/80 Cardiac
48	H.G. C23016	58	55	Positive skin tests	Sinusitis Nasal polypi	6	D.V.F.	I.	B.P. 185/110 Cardiac Arteriosclerosis
49	J.K. D5971	65	57	Father had asthma	Chronic Bronchitis	2	D.V.F.	I.	B.P. 160/84
50	J.Z. E33699	61	57	Hay Fever	Chronic Bronchitis	5	R.T.P. D.V.	S.	B.P. 154/96 Asthma during summer months Emphysema
51	S.P. D58377	70	58	None	Nasal polypi Chronic Bronchitis	2	D.V.	U.	B.P. 120/80 Dyspnea on exertion
52	S.T. J11406	60	59	None	Chronic Bronchitis	1	D.V.	I.	B.P. 130/80 Worse during winter months
53	A.B. E87756	64	59	None	Nasal polypi Chronic Bronchitis	2	D.V.	I.	B.P. 120/80
54	S.T. B2996	61	59	None	Chronic Bronchitis	2	D.V.	I.	B.P. 130/80 Cardiac
55	G.T. J98713	67	60	None	Sinusitis Chronic Bronchitis	2	D.V.	U.	B.P. 150/100 Poor environment Dust and fumes from factories
56	T.C. E53976	63	61	None	Chronic Bronchitis	7	D.V.	U.	B.P. 150/92 Emphysema Arteriosclerosis Cardiac
57	S.S. C73912	71	62	None	Sinusitis Chronic Bronchitis	2	D.V.	U.	B.P. 170/110 Highly emotional Cardiac
58	G.M. E50442	65	62	Hay Fever Positive skin tests Mother had asthma	Chronic Bronchitis	1	R.D.V.	U.	B.P. 150/80 Hay fever at 60 untreated Emphysema
59	S.D. E46468	68	66	None	Sinusitis Chronic Bronchitis	½	D.V.	U.	Emphysema Cardiac
60	E.W. F6019	69	68	None	Sinusitis Chronic Bronchitis	½	D.V.	U.	Cardiac

*See Table I for meaning of abbreviations.

age of onset of asthmatic symptoms ranged from five to sixty-eight years; 53, or 88.3 per cent, of these elderly asthmatics had their onset of symptoms after thirty years. Twenty-seven, or 13.5 per cent, of all the adult asthmatics attending the clinic experienced their asthmatic symptoms for the first time after fifty. These 27 constitute 45 per cent of the patients over fifty (3 allergic, 18 infective, and 6 mixed).

The asthmatic attacks varied from single typical paroxysms to continuous seizures and at times to episodes of intractable asthma or status asthmaticus. The truly allergic asthmatics responded well to environmental control and elimination or immunization therapy with specific inhalent allergens. The most common inhalant offenders were dust, the pollens, feathers, and orris root. Sensitization to foods was exceedingly rare. Infection was an etiologic factor in 81.7 per cent of the patients. In all instances, the upper respiratory tract was examined by an otolaryngologist, existing nasal polypi were removed, and, when necessary, adequate drainage of the sinuses was established. Radical surgery was rarely attempted. All patients were immunized with bacterial stock or autogenous vaccines.

The length of treatment ranged from six months to seventeen years. Forty-three, or 70 per cent, of the patients showed improvement, 7, or 11.7 per cent, showed slight improvement, and 11, or 18.3 per cent, were unimproved. Those who were unimproved following sufficient allergic management had severe cardiac conditions, emotional states, or advanced lung or nasal pathology. Seventeen patients were hypertensives, 20 showed cardiac enlargement, 9 had emphysma, 5 demonstrated highly emotional states, and 1 had bronchiectasis. The clinical picture of bronchial asthma is often mistaken for cardiac asthma, or for respiratory distress due to hypertension or cerebral arteriosclerosis. Asthmatic symptoms may also be simulated by organic pathology in the lungs and by neurotic or hysterical types of dyspnea. Therefore, all these people were referred to the proper specialty clinics for appropriate treatment of these nonallergic ailments which were partially or, perhaps occasionally, entirely responsible for their symptoms.

In these elderly patients the mild and moderate asthmatic attacks were symptomatically controlled by the continuous administration of a saturated solution of potassium or sodium iodide (5 to 30 minims in water after meals); aminophylline in oral doses of 0.1 to 0.2 gm. or as rectal suppositories (0.5 gm.). At times the combination of aminophylline (0.5 gm). and pentobarbital sodium (0.1 gm.) as a rectal suppository gave quicker and more lasting relief than aminophylline alone.[7] Frequently, mixtures of iodides, aminophylline, ephedrine, and some phenobarbital preparation were necessary. These aged patients do not respond well to large doses of vasoconstrictor drugs, specially epinephrine. They experience severe aftereffects and occasionally alarming cerebrovascular symptoms. These should not be used too frequently or in large doses; 3 to 5 minims should be the maximum. Slow epinephrine should be avoided in the aged patient as it

tends to elevate the blood pressure and to maintain it at a high level for an unpredictable time.

For the severe and prolonged asthmatic attacks which were not relieved by the aforementioned drugs, the following methods were resorted to: aminophylline intravenously (0.24 gm. in 10 cc. of saline);[8] infusions of sugar sclution (5 per cent glucose in saline); oxygen (20 per cent) and helium (80 per cent) mixture;[9] equal parts of ether and olive oil, rectally (3 to 5 ounces of the mixture);[10] or tribromethanol (avertin) (50 to 70 mg. per kilo. of body weight).[11] Morphine should not be given to patients with severe asthma. Morphine depresses the respiratory center and the cough reflex, permitting accumulation of bronchial secretion. Occasionally it may act as an tnigen to the patient, aggravating the paroxysm rather than relieving it. The physician may be gratified that the patient is relieved quickly but he will soon realize with a shock that the patient is dead from the morphine. These elderly patients should always be digitalized during these severe and prolonged asthmatic attacks to prevent heart failure from the strain on the right ventricle. When complicating infections are present, the sulfonamides and penicillin should be employed without hesitation.

Perennial allergic coryza or rhinitis is a common occurrence in elderly people. As Spain[12] so aptly states, "Many nasal ailments of diverse origin may be classed as cases of rhinitis or coryza. Their causes may be physical, from heat or cold; chemical, from gases or irritating fumes; mechanical, from obstruction; hormonal; infective, from bacteria or viruses; or allergenic, due to pollens, dust, foods or bacteria." In the elderly patient this type of rhinopathy is serious because it is likely to end in bronchial asthma. These patients complain of frequent sneezing, stuffiness of the nose, postnasal discharge, and, often, a cough. A common complaint is plugging of the ears, resulting in a transient deafness. The diagnosis may be made from the history, physical examination, and x-ray to rule out actual sinusitis. Microscopic examination of the nasal discharge may show an excess of eosinophiles; if the allergy is bacterial, leukocytes and bacteria will predominate. Skin tests may confirm the diagnosis, but the aged skin does not always respond satisfactorily to skin tests.

Of 85 such patients receiving treatment (Table 3), 17, or 21.2 per cent are over fifty, and the oldest is sixty-six. Five are of the skin-sensitive type, 5 are of the skin-negative or infective type, 5 are of the mixed type, and in 2 patients the etiology was undetermined. The age of onset ranged from thirty-one to fifty-four. None of the older group of patients had any nasal symptoms before the third decade. Five, or 29.4 per cent, of the 17 elderly patients, or 7.7 per cent, of all the patients under treatment for perennial allergic coryza, experienced nasal symptoms for the first time after fifty.

Treatment of these patients consisted of an allergen-avoiding program

Table III—PERENNIAL ALLERGIC CORYZA OR RHINITIS

No.	Name No.	Age	Age of Onset	Skin Tests	Foci of Infection	Treatment			Other Pathology and General Remarks
						Dur.*	Imm.	Res.	
1	I.S. C92005	58	31	+	Sinusitis Nasal polypi	7	O.D.V.	S.	Has asthma Thyroidectomy age 47 Polypectomy age 49
2	H.S. E76700	54	33	−	Sinusitis	1	D.V.	I.	B.P. 128/90 Nose operation age 43 Works with chemicals
3	S.A. E13949	53	42	−	None	4	D.V.	U.	B.P. 180/110 Chronic Bronchitis Emphysema Has stuffiness of nose
4	C.P. D75656	54	42	−	None	4	R.T.D.V.	I.	B.P. 100/64 Worse in June and July Menopause Treated with pollens because of history
5	P.B. E2754	53	42	+	None	3	R.D.V.	I.	B.P. 200/130 Pollen Asthma Cardiac
6	J.M. C6460	57	42	+	Sinusitis	1	O.F.D.	I.	B.P. 200/110 Worse in winter
7	J.T. E85825	57	47	−	Sinusitis	1	D.V.	I.	B.P. 134/60 Emphysema
8	R.S. E13944	53	48	−	Sinusitis	3	D.V.	I.	B.P. 120/70 Chronic Bronchitis Emphysema Worse in winter
9	H.G. C69618	65	48	+	Infected teeth and tonsils	7	R.T.P.O.D.	I.	B.P. 120/68 Worse in summer months
10	E.C. D92792	54	49	+	None	4	R.D.V.	I.	Hay Fever Perennial nasal allergy
11	J.G. E81693	58	49	−	Sinusitis	1	D.V.	I.	B.P. 120/60 Chronic Bronchitis Emphysema
12	M.M. E4913	53	49	+	None	3	Dog Ep. D.V.	I.	B.P. 140/90 Has dog at home Chronic Bronchitis
13	S.R. B75599	65	50	−	Sinusitis	10	D.V.	U.	B.P. 144/84 Refuses sinus treatment Generalized arthritis
14	E.H. D98167	66	50	+	Sinusitis	3	F.D.V.	I.	B.P. 130/85 G.I. Allergy since childhood
15	P.O. D89095	56	53	+	None	1	F.D.V.	I.	B.P. 160/90 Chronic Bronchitis
16	I.K. D92542	61	53	+	Sinusitis	4	R.D.V.	I.	B.P. 220/120 Has Early and Late hay fever Polypectomy performed
17	P.M. E4163	58	54	+	None	3	Trees R.D.V.	I.	B.P. 160/100 Has Fall hay fever Urticaria

*See Table I for meaning of abbreviations.

and immunization with specific inhalant allergens. When infection was an etiologic factor, bacterial stock and occasionally autogenous vaccines were employed in conjunction with a house-dust extract. Surgical removal of foci of infection, especially nasal operations, must be conservative in character. In every instance where palliative measures gave relief, they were employed in preference to major operations. Sprays and nose drops, especially vasoconstrictor drugs, should be avoided as much as possible. These drugs are only of temporary benefit and usually cause a rebound congestion of the mucosa. The nasal congestion is aggravated and maintained from continuous use of these drugs. Moreover, side effects such as tremors, nervousness, tachycardia, and palpitation are very common in the aged. The antihistaminic drugs, pyribenzamine and benadryl, are helpful for the symptomatic relief of nasal congestion of allergic origin. The length of treatment ranged from one to ten years. Fourteen, or 82.3 per cent, of the patients showed improvement, 1 showed slight improvement, and 2 were unimproved. The majority of the patients had cardiovascular and pulmonary complications similar to those recognized in the frank asthmatics.

DISCUSSION

In the changing age composition of our population the older group is increasing. A notable reduction in mortality and a consequent increase in life expectancy has taken place within the present century. In New York City between 1900 and 1940, the proportion of persons over forty-five years of age increased from 15.9 per cent to 27.3 per cent of the total population.[13] Consequently, an increasing number of individuals of advanced age exhibit symptoms of allergic manifestations. In the majority of cases the symptoms become milder as the patient grows older, since he becomes less active and less exposed to the various agents in industry and environment, both specific and nonspecific. At times the symptoms will disappear completely with age, as happens in migraine and in some cases of hay fever and dermatoses. However, many elderly people are still markedly allergic, and it is not uncommon for them to become allergic for the first time at a late age. The commonest expression of allergy in the aged are nasal and respiratory symptoms, especially asthma.

Of 507 patients under treatment for respiratory allergies in this clinic, 21.5 per cent, or a little over one-fifth, are over fifty years old, and 7.1 per cent of all the patients showed symptoms for the first time after fifty. Fourteen per cent of the hay fever patients, 30 per cent of the asthmatics, and 21 per cent of the perennial rhinitis patients are over fifty, and 2 per cent, 13.5 per cent, and 7.7 per cent of the three types of cases, respectively, experienced symptoms for the first time after fifty. It is striking that the majority of the patients in the older group had their onset of symptoms at a relatively late age, after thirty years (hay fever, 75 per cent; asthma, 87 per cent; and perennial coryza, 100 per cent of the cases). These statistics

are in contrast with the reports that the majority of allergic individuals of all ages begin to manifest symptoms at an earlier period. Huber[14] in an analysis of 300 cases of hay fever showed that the onset of symptoms occurred as follows: first decade, 23 per cent; second decade, 35 per cent; third decade, 26 per cent; fourth decade, 12 per cent; beyond fourth decade, 4 per cent. Fifty-eight per cent of all hay fever patients had their onset of symptoms in the first two decades.

Bray[15] in an analysis of 4,317 asthmatics noted that 34 per cent experienced onset of symptoms during the first decade, 14 per cent in the second, 18 per cent in the third, 16 per cent in the fourth, 10 per cent in the fifth, 6 per cent in the sixth, and 2 per cent after the age of sixty. Forty-eight per cent of all the asthmatics had onset of symptoms in the first two decades.

That only a small number of the older group of allergic patients (13 per cent) can date their onset of symptoms to the first or second decade may be attributed to early recognition and adequate treatment of the allergic manifestations in the younger group of patients with lack of permanent irreversible sequellæ, especially infective processes. Also, as Rackeman[16] has shown, clinical sensitiveness may diminish from year to year and often disappear in some patients.

A family history of allergy is vague and not readily established in the older patients. Only 13 per cent of them could volunteer such information. In the aged, despite skin atrophy, reactivity to skin tests may be acute, as noted in the systemic reactions occurring after testing and treatment. A fatality following testing was reported by Wiseman and McCarthy-Brough in a patent age seventy-two.[17] If such is the case, then the elderly patient requires the same care in testing and in treatment as is given to any other age group. Because of the chronicity of the allergic manifestations in elderly patients, the general impression seems to be that they respond poorly to treatment. After a careful review of the records it becomes apparent that such an impression is erroneous. Eighty-four per cent of the hay fever patients, 70 per cent of the asthmatics, and 71 per cent of the allergic rhinitis patients were benefited by allergic treatment.

Infection, or bacterial allergy, was found to be the most common etiologic factor in 82 per cent of the older asthmatics and in 59 per cent of the rhinitis patients. By comparison, Cooke[18] has shown that in a group of asthmatics of all ages, about 35 per cent had symptoms due to infection alone and 15 per cent to 20 per cent had symptoms from both infective and noninfective causes. A timely removal of foci of infection in the patients now over fifty might have avoided many of the nasal and pulmonary episodes. With advancing age, complicating factors make surgery more difficult and more dangerous than in early life. About 75 per cent of the patients have cardiovascular or pulmonary complications. Some degree of emphysema is usually present and remains a serious problem.[19] The infective asthmatics

responded favorably to immunization treatment with stock or autogenous bacterial vaccines and a house dust-extract, in conjunction with palliative local nasal treatments.

The elderly patients may have fewer complaints than the younger ones, but their sense of security is heightened when they receive medication. Therefore, symptomatic treatment should not be overlooked, and instructions as to proper administration carefully explained to avoid overdosage.[20] Small doses of iodides, aminophylline, ephedrine, and cough mixtures will usually relieve the mild asthma and bronchitis. Continued use of epinephrine is to be condemned. It is not only dangerous, but it usually leads to status asthmaticus.[21] The antihistaminic drugs have not proved to be effective in controlling symptoms of bronchial asthma, especially in the infective cases.[22] Treatment of the severe asthmatic attacks does not differ from that used for younger individuals. In addition, elderly patients should be given digitalis to prevent right heart failure from strain on the right ventricle.

In conclusion, it may be said that age alone is no valid basis for rejecting the possibility of an allergic mechanism in a given case. People of advancing age require the same care in testing and treatment as the younger group. As emphasized by Rackeman,[23] loss of weight, loss of strength, and mental equilibrium, which he calls "depletion," may be avoided if the nonallergic debilitating conditions are recognized and treated. The allergics of advanced age may live in comparative comfort if not neglected. They respond favorably to allergic management.

References

1. Vaughan, T. W.: Minor Allergy: Its Distribution, Clinical Aspects and Significance. J. Allergy, 5:184, 1934.
2. Cooke, R. A., and Vander Veer, A.: Human Sensitization. J. Immunol., 1:201, 1916.
3. Spain, W. C., and Cooke, R. A.: Studies in Specific Hypersensitiveness: II. The Familial Occurrence of Hay Fever and Bronchial Asthma. J. Immunol., 9:521, 1924.
4. Boas, E. P.: Treatment of the Patient Past Fifty. 2nd ed. Chicago: Year Book Publishers, 1941. 7 pp.
5. Urbach, E., and Gottlieb, P. M.: Allergy in the Aged, Allergy 2nd ed. New York: Greene & Stratton, 1946. 878 pp.
6. Klumpp, T. G.: Care of the Aged and Chronically Ill. Paper read at the Annual Meeting of the American Public Health Association, Cleveland, Ohio, Nov. 14, 1946.
7. Prigal, S. J., Fuchs, A. M., and Schulman, P. M.: The Treatment of Asthma with Rectal Suppositories of Aminophyllin and Sodium Pentobarbital. J. Allergy, 17:172, 1946.
8. Hermann, G., and Aynesworth, M. B.: Successful Treatment of Persistent Extreme Dyspnoea "Status Asthmaticus." Use of Theophylline Ethylene Diamine (Aminophyllin) Intravenously. J. Lab. & Clin. Med., 23:135, 1937.
9. Barach, A. L.: Use of Helium in Treatment of Asthma and Obstructive Lesions in Larynx and Trachea. Ann. Int. Med., 9:739, 1935.
10. Maytum, C. K.: Bronchial Asthma: Relief of Prolonged Attack by Colonic Administration of Ether. M. Clin. North America, 15:201, 1931.
11. Fuchs, A. M.: The Interruption of the Asthmatic Crisis by Tribromethanol (Avertin). J. Allergy, 8:340, 1937.
12. Spain, W. C.: Allergic Rhinitis: Perennial (Vasomotor Rhinitis-Hyperplastic Rhinitis) Allergy in Theory and Practice, R. A. Cook. Philadelphia: W. B. Saunders Co., 1947. 220 pp.
13. Our Aging Population. City of New York, Dept. of Health, Quart. Bull., 9:55, 1941.

14. Huber, A. L.: A Critical Analysis of the Information Obtained from Hay Fever Sufferers. J. Allergy, 2:48, 1931.
Suffers. J. Allergy, 2:48, 1931.
15. Bray, G. W.: Recent Advances in Allergy. 3rd ed., Philadelphia: Blakiston, 1937. 193 pp.
16. Rackeman, F. M.: Ultimate Prognosis in Hay Fever. Am. J. M. Sc., 177:333, 1929.
17. Wiseman, J. R., and McCarthy-Brough, M. P.: Skin Sensitivity in the Aged, Fatality Following Intradermal Tests. J. Allergy, 16:250, 1945.
18. Cooke, R. A.: Asthma in Children. J.A.M.A., 102:614, 1934.
19. Forman, J.: Bronchial Asthma with Special Reference to its Elderly Victims. Geriatrics, 1:80, 1946.
20. Thewlis, M. W.: The Care of the Aged (Geriatrics), 5th ed. St. Louis: C. V. Mosby Co., 1946. 90 pp.
21. Fuchs, A. M.: The Treatment of Allergic Emergencies. Bull. N. Y. Med. Coll. Flower & Fifth Ave. Hosp., 3:140, 1940.
22. Fuchs, A. M., Schulman, P. M., and McGavack, T. H.: Benadryl in Bronchial Asthma. Amer. J. of Med. (in publication).
23. Rackeman, F. M.: Depletion in Asthma. J. Allergy 16:136, 1945

REFRIGERATION ANESTHESIA AIDS SURGICAL PATIENTS PAST 70

Although refrigeration anesthesia has not been used extensively, it has certain advantages that will greatly increase its scope and frequency as time goes on, the American Medical Association was told at its centennial session on June 13.

The prediction was made by Dr. John B. Dillon, Los Angeles, in a paper entitled, "Anesthesia for the Aged," presented before the Section on Anesthesiology.

Explaining that the present-day prolongation of life means that surgery for patients over 70 is increasing in frequency, Dr. Dillon, who is associated with the Los Angeles County General Hospital, said that continued investigation into the best kinds of anesthetic for patients of advanced years is essential.

"In the older age groups particularly, reduction of circulating blood volume, diminution of the oxygenation of the blood, and other disturbances coming as a result of anesthesia and surgery cannot be tolerated," Dr. Dillon said, explaining that, as a result of these factors, great attention must be paid not only to the choice of anesthetic, but also to care before, during and after the operation.

Citing statistics which indicate that spinal anesthesia was the method of choice in over half of the cases studied, he said that various types of regional, intravenous and inhalation anesthesia were used in nearly all the rest.

"Refrigeration anesthesia was used only 10 times, but was highly satisfactory," he said. "It will be used more in the future, since the patient's general condition is frequently very much improved after the anesthesia has become established."

GERIATRICS

Official Journal of the American Geriatrics Society

OFFICERS OF THE AMERICAN GERIATRICS SOCIETY

WALTER E. VEST, M.D., *President*
EDWARD B. ALLEN, M.D., *First Vice President*
HOLLIS E. CLOW, M.D., *Second Vice President*
MALFORD W. THEWLIS, M.D., *Secretary*
RICHARD J. KRAEMER, M.D., *Treasurer*

Correspondence pertaining to the American Geriatrics Society should be addressed to Dr. Malford W. Thewlis, Secretary, 25 Mechanic Street, Wakefield, Rhode Island.

GERIATRICS BEGINS AT TWENTY

AT THE recent meeting of the American Geriatrics Society, Dr. Thewlis advocated a combination of preclinical medicine and geriatrics under one term—geriatrics. Preclinical medicine, which is preventive geriatrics, should begin at twenty when the pediatrician has completed his work. Geriatrics proper would begin at forty. The combination of the two studies is not suggested as another specialty in medicine but is actually a part of internal medicine.

By observing the methods of attacking prevention of disease, as given in the article in this issue, the practitioner can approach the treatment of diseased soils long before the symptom stage appears. These principles apply to the prevention of common diseases of old age and not to communicable diseases which are commonly included under preventive medicine. In the article are included several diseases which can be handled from the preclinical point of view. Surgery should be included since there are many surgical conditions which, if corrected in earlier life, would prevent much suffering in old age.

A. E. H.

AMERICAN GERIATRICS SOCIETY

Officers, 1947-48

President: Edward B. Allen, M.D., White Plains, N. Y.

First Vice-President: Hollis E. Clow, M.D., White Plains, N. Y.

Second Vice-President: Edwin J. Doty, M.D., New York, N. Y.

Secretary: Malford W. Thewlis, M.D., Wakefield, R. I.

Treasurer: Richard J. Kraemer, M.D., Providence, R. I.

Auditors: John A. Bolster, M.D., William C. Thompson, M.D.

Executive Committee:
Drs. Edward B. Allen, Hollis E. Clow, Malford W. Thewlis

Membership Committee: Drs. Carl A. Williams, Edward B. Allen, Lucien Stark, Harold Lovell, John A. Bolster

Program Committee: Drs. Edward B. Allen, Donald L. Burdick, Joseph T. Freeman, Hollis E. Clow, Edwin J. Doty

Publication Committee: Drs. Walter E. Vest, Wingate M. Johnson, A. E. Hedback, Edward B. Allen, Malford W. Thewlis

Education Committee: Drs. William F. King, Edward B. Allen, Albert Mueller-Deham, Wingate M. Johnson, William J. Kerr, Willard O. Thompson, Hollis E. Clow, Edward L. Tuohy, Elizabeth Mason-Hohl

Associate Member: Miss Alison Vickery, Chairman, Attleboro, Mass.

CORRESPONDENCE

Dear Dr. Hedback:

In *Geriatrics* [(Jan.-Feb., 1947)] appeared an article by Dr. Joseph T. Freeman, titled, "The Basic Factors of Nutrition in Old Age." In this article, on page 45, he mentions the leg cramps of which older patients may complain, and describes them as localized tetanic manifestations possibly related to a calcium deficiency.

This complaint, whatever may be the cause, occurs in patients who do not necessarily have occluded vessels, but it is interpreted as a sign of vascular disease often enough so that one who specializes in that field frequently must treat such cases. In my practice of peripheral vascular disease I knew of no therapy for these cramps that was of any benefit until a simple remedy was suggested to me by Dr. L. W. McGuire of Malden, Massachusetts. He told me that a teacher of his had recommended quinidine for the nighttime cramping of the legs of elderly people. Dr. McGuire had found this therapy very reliable during many years of his practice.

I prescribed quinidine, too, and found it was a remarkable remedy in many of my patients with leg cramps; yet, I have not encountered reference to this therapy. The dosage recommended to me was: 0.2 gm. *per os* as bedtime, and repeat in 2 to 3 hours if necessary. In my cases, it was not always necessary to repeat the dose; and, after a few days of treatment, if the

cramps did not recur, the therapy could be omitted for days or weeks.

One should understand clearly that this therapy will doubtless fail if the rest pain is due to ischemia, which is greatly aggravated when an elderly patient reclines and the extremity is elevated to the horizontal. This last type of pain is sometimes relieved by elevation of the head of the bed six to eight inches; this degree of downward slant of the bed, providing the mattress does not sag in the middle, is usually enough to restore color to the toes, and it is the simplest remedy to try in attempting to relieve rest pain due to ischemia.

With the dose mentioned no harm should be anticipated, but I was accustomed to warn the patient not to indulge in more than three tablets of quinidine in one night without first consulting me. The occasion did not arise to give more than that number of tablets in one night. Should this appear to be necessary, I would suspect the original interpretation of the indication to be faulty.

Very truly yours,
K. W. THOMPSON, M.D.
154 Upper Mountain Ave.
Montclair, New Jersey

Dear Dr. Hedback:

In your current issue of *Geriatrics* (March-April) I was interested in your article about Dr. George Haggard (Oldest Practicing Physician Contest, page 100).

We had a physician in our city, Dr. P. D. Sims, who practiced until he was 92 years of age, but he died several years ago.

I have been in practice here since April, 1884, some 63 years, and will be 86 on June 22. My health is excellent, and I drive a car.

I enjoy the magazine very much, and you are doing a good work.

Sincerely,
FRED B. STAPP, M.D.
Chattanooga, Tennessee

Gentlemen:

On page 100 of your March-April issue of Geriatrics regarding the oldest practicing physician contest, I wish to add that I graduated from Jefferson Medical College on May 1, 1894. I am now in my 54th year of active practice; fifty-two years right here in Winona, Minnesota, in the same office. My first year, I was assistant surgeon in the National Soldiers' Home at Los Angeles, California. I was 75 years old January 12, 1947.

Very truly yours,
Charles P. Robbins, M.D.
Winona, Minnesota
May 27, 1947

Dear Dr. Thewlis:

My associate, Dr. Frank C. Jadosz, called my attention to the "Oldest Practicing Physicians' Contest" referred to in March-April, 1947, number of Geriatrics.

I graduated from College of P & S, Columbia University, in June, 1890, and located as a general practitioner on Hawthorne Street, Providence, Rhode Island, on August 13, 1890. Since that time I have continued in general practice uninterruptedly on the same street and with the help of my efficient associates, am still carrying on a very large general practice. Several years ago I eliminated active hospital work, obstetrics, and night calls from my regular active routine. My health is excellent and I tell my friends I plan to kick around lively for twelve or fifteen years, then slow up and take it easy.

Yours very truly,
Edmund D. Chesebro, M.D.
Providence, Rhode Island

Digests FROM CURRENT LITERATURE

Gastragogue Effect of Laxatives and Allyl-Bromide Mixture.

HENRY M. FEINBLATT AND EDGAR A. FERGUSON, JR. *American J. Digestive Diseases,* 13:386-390 (Dec.), 1946.

Defining a gastragogue as a substance that aids in emptying the stomach of its contents, Feinblatt and Ferguson reported their clinical and roentgenographic study of the allyl-bromide mixture consisting of all the natural products of bromination of garlic. The allyl-bromide mixture was demonstrated to be a useful agent in stimulating gastric motility and physiological emptying of the stomach which shows retention. The gastragogue effect was associated with subjective relief of symptoms. When allium sativum is brominated, the resulting allyl-bromide mixture shows the clinical action of a carminative. Gastric analyses on rats showed definite evidence of gastric stimulation. The laxative drugs studied did not increase stomach motility or secretion.

1 table and 4 illustrations. Bibliography of 14 references.

Adrenal Apoplexy Associated with Hypertension.

R. L. MACMILLAN, Toronto, Canada. *The Lancet, London,* 1, No. 5:177-178 (Feb. 1), 1947.

Adrenal hemorrhage is one of the most unexpected and perplexing conditions encountered in clinical medicine. The interest lately taken in the Friderichsen-Waterhouse syndrome of adrenal hemorrhage in septicemia has tended to create the impression that this syndrome and adrenal hemorrhage are synonymous. Adrenal hemorrhage does, however, occur without septicemia, as illustrated by the case of a man aged 60 who had been in good health so far, though several years previously he had been told that he had a high blood-pressure and that his heart was impaired. He suddenly complained of severe pain in the epigastrium and the lower chest on the left side. He was taken to the hospital, where he died 72 hours after the onset of the illness. At necropsy the cause of death was found to be massive hemorrhage into both adrenal glands. They were enlarged; the capsules were tense and bulging but intact. Section showed an area of blood-clot surrounded by a thin layer of golden cortical tissue. Macroscopically the adrenal blood vessels were free from thrombi. Microscopically both adrenals presented a similar appearance. The central area of hemorrhage was surrounded by necrotic cortex infiltrated by polymorphs. The arterioles in the capsule were markedly hyalinized. It was not possible to say definitely whether the hemorrhage had been caused by rupture of an artery in the medulla or by primary venous thrombosis. The history of hypertension favors an arterial hemorrhage.

The pain associated with adrenal apoplexy is strong presumptive evidence of a visceral afferent pathway with sensory endings in the capsule. Stretching of the capsule would cause pain in the same way as distension of the gall-bladder does. Abdominal pain is of variable occurrence in the Friderichsen-Waterhouse syndrome. Vomiting is often present and is probably of reflex origin. Death is caused by acute adrenal cortical insufficiency, leading to circulatory collapse, characterized by increasing shock, falling blood-pressure, and cyanosis.

The mechanism of adrenal apoplexy is obscure, but hypothetical approach can be made through consideration of the following factors: The first is the

tissue of the gland supporting the blood vessels. The vessels lie in contact with cortical and medullary cells. The destruction of these cells would remove support from the vessels and the walls would burst. The second factor is the state of the vessel wall, which may be damaged by trauma or toxemia, as in burns; septicemia; or the degenerative changes of arteriosclerosis.

The third factor is the pressure of the blood in the vessels. Hypertension increases the strain on the vessel walls and predisposes to hemorrhage.

The last factor is a general hemorrhagic tendency; adrenal hemorrhage has been observed in patients with leukemia.

Thrombosis of the veins is merely evidence of a circulatory disturbance and, instead of being the cause of the hemorrhage, may be the result of parenchymal congestion.

Bibliography of 20 references; 2 figures.

The Relationship of Gastric Acidity to Thiamine Excretion in the Aged.

HENRY A. RAFSKY, BERNARD NEWMAN AND NORMAN JOLLIFFE. *J. Laboratory and Clinical Medicine* 32, No. 2:118-123 (Feb.), 1947.

In a study of the gastric secretory response in the aged, it was shown that, while hyperchlorhydria was not infrequently found, the majority of the subjects examined had 19 degrees or less of free hydrochloric acid in the gastric juice. In previous articles it has been demonstrated that there is a tendency to avitaminosis in the aged. Jolliffe suggested that the failure of some elderly people to absorb thiamine, may be due to the achlorhydria so often encountered in this age group. A difference of opinion still exists as to the effect of thiamine deficiency upon gastric acidity and secretion; however, the prevailing opinion has been, that thiamine deficiency suppresses the gastric secretion. In 1937, Joffe and Jolliffe postulated the presence of an achlorhydria-preventive factor in the vitamine B complex, which was not identical with either vitamin B_1, or the antipellagra factor.

In view of the differences of opinions as to the effects of thiamine deficiency upon gastric acidity and secretion, and in view of the tendency of aged individuals towards decreased gastric acidity, as well as the prevalence of avitaminoses in elderly subjects, the relationship between thiamine levels and the gastric acidity in a group of apparently normal individuals from 65 to 81 years was studied. Of the 31 subjects 14 or 45.1 per cent had low hydrochloric acid values. The fasting gastric acidity and secretory response after a test meal were determined. Six had true achlorhydria (no free hydrochloric acid was obtained after injection of histamine in a dosage of 0.1 mg. per 10 kilograms body weight), 2 of the last mentioned 6 had subnormal daily urinary excretions of thiamine, and 4 had levels ranging from 98 to 330 mg. per day. Nineteen had from 2 to 49 degrees of free hydrochloric acid, and 10 showed abnormally low thiamine excretion values. Six of 31 had 50 degrees or more of free hydrochloric acid after a water and toast test meal.

The authors found both high and low thiamine values in subjects with anacidity, hypochlorhydria, and hyperchlorhydria. Since a low thiamine excretion is compatible with histamine-fast achlorhydria, as well as with hyperchlorhydria, it is questionable, whether there is any causal relationship between the gastric secretory response and thiamine deficiency in normal elderly subjects.

Bibliography of 22 references; 1 figure; 2 tables.

The Problem of the Aged in Northern Ireland.

EILEEN M. HICKEY, *Ulster Med. J.*, 15, No. 2:150-152 (Nov.), 1946.

There are two very cogent reasons why this problem should be tackled without delay, the principal reason being the existing poor state of affairs; the second is the fact that the ratio of aged compared to other groups in the community is going up steeply. There are 2,000 old people in six counties of Ireland living alone who are either wholly or partially unfit to look after themselves. Each one is, therefore, in immediate need of attention in some form other than monetary help. In addition to this, there are another 1,000 unfit or partially so in lodgings, each of whom has his particular thorny problem, not to be solved by mere coldblooded legislation. Out of the population of 1¼ millions in Northern Ireland, there are 95,000 old age pensioners; of these, 14,000 live alone in a single room, having no near relatives.

According to the Beveridge Report, in Great Britain, men of 65 and over, and women of 60 who in 1941 comprised 12% of the population, will in 1971 comprise 20.8%. In 1945 there were 16 pensioners per 100 contributors, in 1975 there will be 31. One out of every three contributors is likely to have a pensioner to look after, the increase in gross numbers from 5.6 millions to 9.6 millions being inevitable. At this ratio, there will be 5,000 unfit old persons living alone in Northern Ireland. There are now 50 almshouses, 215 common lodging-houses, 284 charitable institutions and 100 hostels and paying homes available, which accommodation bears little relation to the size of the problem. Besides, no steps have as yet been taken to cope with the saddest and most urgent problem, the provision of suitable hospital accommodation for aged persons whose mental condition is such that institutional treatment is essential.

There are many arguments against herding old people together in large institutions; therefore, more common lodging houses are required. Hostels are needed with 25 to 30 inmates, with a home-like atmosphere. Houses, flatlets, cottages built specially to suit requirements of the aged, including furniture, beds, baths, stairs, lighting, should form part of every housing scheme. Colonies of cottages with communal dining facilities and small hospitals attached are most desirable. Old people's welfare committees should be established in every area. Home-nursing facilities should be available under Government Health Service. The medical profession has a large share in the general responsibility, and might fittingly play a leading part.

Carcinoma of the Prostate: A Resumé of Treatment with Ethinyl Estradiol; Preliminary Report.

LOWRAIN E. MCCREA, *J. Urol.*, 56, No. 6:697-703 (Dec.), 1946.

In a series of 15 cases subjected to combination therapy, including the use of Ethinyl Estradiol, the longest period of survival observed so far was 27 months. This patient is still without symptoms.

The side effects of Ethinyl Estradiol are not as severe as those seen during the use of diethylstilbestrol. Combined therapy of castration and estrogens (Ethinyl Estradiol) produced subjective improvement in every instance. The dosage routinely employed was 0.05 mg. daily for a period of 30 days, succeeded by a 30-day rest period. Such a routine treatment may be continued indefinitely.

Transurethral resection was not done in a single instance after combined therapy was instituted. Regression of the carcinomatous prostate occurred within 30 days after orcidectomy. Urinary difficulties or retention was controlled by indwelling urethral catheter. The patient was tested at weekly intervals for ability of urination and existence of residual urine.

It is believed that transurethral resection should not be done routinely, but only in those instances in which regression of the prostatic carcinoma does not occur. It is a debatable ques-

Grandma's downright kittenish!

— since she had her shots of CUTTER ARTHRITIS VACCINE

Really, it's surprising—the number of arthritic patients who "feel better than they have in years," after treatment with Cutter Arthritis Vaccine (Sherwood's Formula).

Crowe* records that such comments as "can now kneel"..."can now go up and down stairs"...."can now walk without a stick"... are frequent among his patients. And, of course, there's the prize one where "ten years of continuous pain disappeared after the seventh injection."

We can't say, exactly, how this vaccine alleviates arthritic pain. Or why it slows down the progress of the disease. But the fact remains — *it does!*

*Crowe, H. Warren, *Handbook of the Vaccine Treatment of Chronic Rheumatic Diseases*, Oxford University Press, 2nd edition, 1932, covering treatment with similar vaccines.

Sherwood's Formula contains polyvalent strains of:

Streptococci . . .	30%	with 1,000,000 organisms per cc.
Staphylococci . .	30%	
Pneumococci . .	10%	
M. catarrhalis . .	10%	
B. friedlanderiae .	10%	
B. influenzae . .	10%	

Cutter Arthritis Vaccine won't help all patients and many who are helped may have relapses — but it's a safe way to start, backed by a sound theory, and it carries with it none of the hazards of gold. Surely, you'll want to see what its results will be in your practice.

CUTTER

Fine Biologicals and Pharmaceutical Specialties

CUTTER LABORATORIES • BERKELEY 1, CALIFORNIA

tion, as to whether increased metastasis occurs following resection.

2 figures; biblography of 5 references.

Heart Block.

ROBERT BENTON WOOD. *Tennessee St. Med. Assoc.* 40 No. 1:11-16 (January) 1947.

The nature of agents causing temporary or permanent block are many; they vary from toxic factors (for instance drugs) to organic vascular disease. Conduction time of the impulse is measured by the electrocardiogram and is represented by the P-R interval, normally varying from .16 to .20 seconds, according to age. Block is suspected when the pulse rate becomes slower than thirty-five.

Sinoauricular block may either be partial or complete. Drugs of the digitalis or cinchona groups exert their influence through depressing effect on the sinoauricular nodes and furnish a very common cause of bradycardia.

Auriculoventricular block was the first type ever described (De Sedibus Morgagni, 1769). It embraces an extensive range of disturbances, varying from simple increased vagal tone to complete dissociation in which no impulses are capable of passing through.

Bundle Branch Block is a term applied to involvement of the branches of the conduction system. Its prognosis varies with the presence or absence of other signs of heart disease.

In simple terms treatment is directed to the cause where found and where subject to amenable action. Increased vagal activity is removed by atropine; complete block is rarely affected by anything, especially if caused by arteriosclerotic disease.

The drug list includes atropine, epinephrine, ephedrine, amphetamine, nitroglycerine, barium chloride, thyroid extract, metrazol, nikethamine; and the use of vasodilators are still the order of the day, even if their effect is overestimated.

9 figures. Bibliography of 8 references.

A Rotating Resector: A Modification of the Stern-McCarthy Instrument.

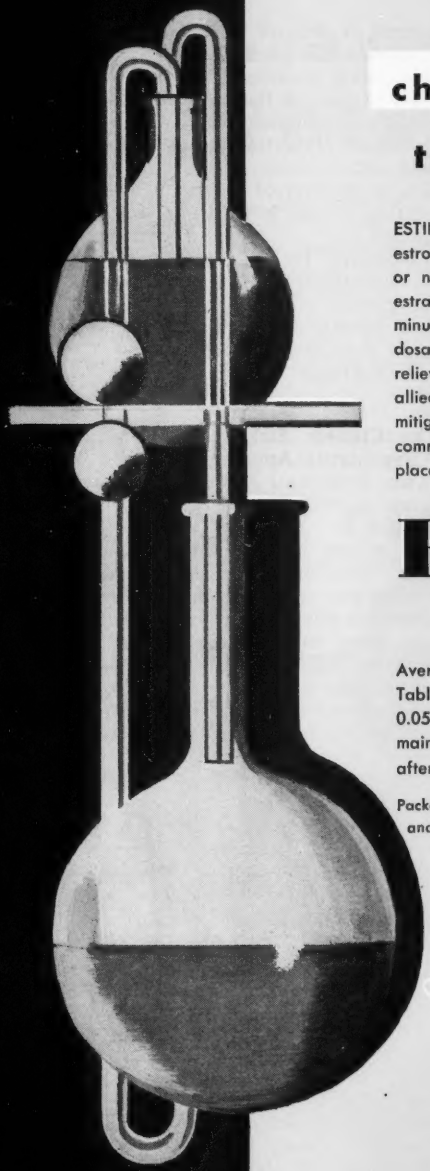
WILLIAM WALLACE SCOTT and JAMES BUCHANAN BRADY. Urological Institute, Johns Hopkins Hospital, Baltimore, Md. *J. Urol.* 57, No. 1:145–148 (Jan.), 1947.

Time has proved the soundness of the Stern-McCarthy resectoscope which is operated by two hands. The development of Nesbit and also of Gibson has permitted operation of the instrument with one hand, enabling the operator to have a free hand for rectal palpation.

In the original instrument of Stern-McCarthy current and water leads became easily entangled necessitating counter rotation to disentangle. With the assistance of A. Lutz, a pistol-grip resector was designed and made so as to permit complete rotation of the loop, lens and sheath, without rotation of the electrical and water leads and the grip member.

Through co-operation of Frederick J. Wallace, a workable instrument has been made, incorporating the standard sheath, loop and 68A telescope. Lens, loop and sheath can be rotated by 180°, accomplished by turning the scalloped disc proximal to the sheath with the index finger of the same hand. Stability with one hand is secured by working the trigger with the middle finger. This permits steadying of the instrument with the index finger.

Operation with two hands increases the stability of the instrument, particularly in resecting posteriorly. Rotation of the lens, loop and sheath can then be accomplished with either the index finger, or the opposite hand. Complete rotation, clockwise or counter-clockwise, can be accomplished in either instance. The excursion of the loop is easily controlled by one finger. The pistol-grip in no way interferes with the excursion of the loop.



chemically similar to natural estrogens

ESTINYL (ethinyl estradiol) is "chemically similar to natural estrogen."[1] It is more active *orally* than any other synthetic or natural estrogen known today. ESTINYL is the first estradiol preparation that is efficacious by mouth in really minute amounts. It provides the economy inherent in low dosage. Five-hundredths of a milligram daily is sufficient to relieve the average menopausal patient. ESTINYL, closely allied to the primary follicular hormone, does more than mitigate vasomotor symptoms. ESTINYL quickly relieves the common nervous manifestations and bodily fatigue, and replaces them with a sense of emotional and physical fitness.

ESTINYL

tablets

Average menopausal symptoms: One 0.05 mg. ESTINYL Tablet daily. Severe menopausal symptoms: Two or three 0.05 mg. ESTINYL Tablets daily. Many patients may be maintained in comfort with 0.02 mg. ESTINYL Tablet daily after initial control of estrogen deficiency.

Packaging: ESTINYL TABLETS of 0.05 mg.—pink, coated tablets and 0.02 mg.—buff, coated tablets, bottles of 100, 250 and 1,000.

1. Bickers, W.: Am. J. Obst. & Gynec. 51:100, 1946.

Trade-Mark ESTINYL—Reg. U. S. Pat. Off.

Schering CORPORATION
BLOOMFIELD, N. J.

In Canada, Schering Corporation Limited, Montreal

Mostly one water lead is sufficient; however, a second lead can be connected to the sheath.

Three figures with 5 illustrations.

The Nutritional Role of Cholesterol in Human Coronary Arteriosclerosis.

CARL F. SHAFFER, *Medical Record and Annals* (Houston), 41, No. 2:88-91 (Feb.), 1947.

According to Hueper, the fundamental causal mechanism of arteriosclerosis is an impairment of nutrition and oxygenation of the artery, resulting in damage to the endothelium, increased permeability of the intima, and infiltration of the plasma into the subintimal tissue with later proliferation of endothelial cells and degeneration of the muscular and elastic elements of the media. In regard to the etiology of atherosclerosis he states that, if the plasma contains temporarily or persistently large amounts of cholesterol or physico-chemically related substances forming emulsions with the plasma, there occurs a retention of this material in the proliferating endothelial cells with the ultimate formation of atheromata. The histology of atherosclerosis is characterized by lesions with high cholesterol content localized in the subendothelial stratum of the intima of the artery. There is an early collection of phagocytic cells in this site. These cells contain cholesterol crystals in fluid and solid forms, with later invasion of these cells to the deeper strata of the intima. Necrosis occurs because plasma diffusion is insufficient to nourish the intima. Vascularization results with ultimate repair by connective tissue and finally deposition of calcium.

The dietary sources of cholesterol are of animal origin. One of the greatest sources is found in milk and cream, it contains about 250 mg. of cholesterol per quart. The metabolism is presumably regulated by the activity of the reticuloendothelial system. Excess cholesterol is difficult to metabolize and remains in the tissues for long periods stimulating connective tissue formation. Certain of the endocrine glands exert a controlling effect on cholesterolemia. Hyperthyroidism is associated with no atherosclerosis, the function of the thyroid having an inverse relation to the level of plasma cholesterol.

However, his conclusions are that the nutritional role of cholesterol in the genesis of human atherosclerosis is of doubtful significance, unless there is an associated endocrinopathy.

Bibliography of 13 references; 2 tables.

The Chronic Sick in Hospital; a Psychiatric Approach.

JAMES WHIGHAM AFFLECK, *The Lancet* (London), March 22, 1947: 355.

A survey of 788 chronic-sick patients was undertaken to ascertain what types are found in the wards allotted to this group. Special attention was given to the mentality of the patients and to arrangements for bringing special types together. Women outnumbered men by almost 2½ to 1 (552 to 236, or 70.1 to 29.9 per cent). Almost 80 per cent were over 65, and of the rest more than one third were over 60. Many geriatric cases were recorded as senile weakness where cardiovascular degeneration or myocardial weakness might have been equally appropriate, some had senile dementia with degeneration of the cerebral cortex which would also be a factor in the weak muscular state. Such degenerations and cardiovascular accidents associated with old age were very much in evidence. Osteoarthritis occurred in 11 per cent of female and 5 per cent male cases; rheumatoid arthritis (3.9 per cent) was almost limited to females. Chronic bronchitis was seen in nearly 10 per cent. Of the 788 patients 294 showed obvious mental symptoms. The sexes were equally affected. Among those aged 65 and

When man's spirit is younger than his stomach...

Knox is a wonderful food

As any doctor knows, many older people are often far more active than their years would seem to warrant—even though the individual may have impaired digestion. In such a situation Knox Gelatine is extremely helpful...for with pure, unflavored Knox it is easy to make dishes within the limits of a prescribed diet, that are both attractive and "real tasty."

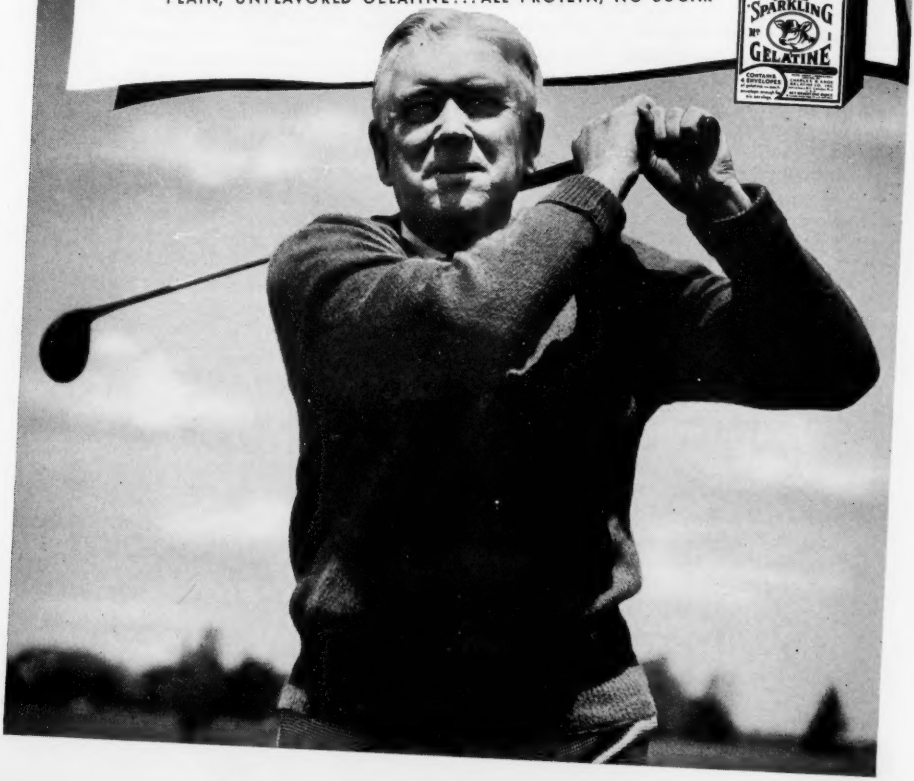
Knox can be combined with fish, meat, or eggs, as well as fruits or vegetables, in the widest variety of delicious dishes. And in the cases where the doctor wishes to supplement protein from other dietary sources, it is easily combined with warm milk or fruit juices in a gelatine drink.

The scope of the Knox recipes is so wide there are many, many appetizing dishes that add not only protein but other important dietary factors to the diet.

FREE DIETS AND RECIPES. ***Specially prepared dietary booklets will be sent FREE upon request to Knox Gelatine, Department 485, Johnstown, N. Y.***

KNOX GELATINE (U. S. P.)

PLAIN, UNFLAVORED GELATINE...ALL PROTEIN, NO SUGAR



over, 35 per cent showed symptoms. Forgetfulness is normal in senescence; it is of the same nature as the stiffening of aged joints. Chronic delusional states with some systematization (paranoid states) were found, especially among the deaf and older people. Mental defectives and epileptics who are not suitable for training present a problem which is almost insoluble, due to scarcity of institutional beds.

The fundamental clinical subdivision is the segregation of patients with major disorders of the mind. The old are nursed separately from the others, and special arrangements are made for types with social defects (incontinence, etc.). As regards admission of patients, the mental state should be assessed and arrangements made to transfer them to the chronic ward suitable to the patient's capacity, interests, and age group. Up-patients require day rooms, and many who have difficulty in walking are found accommodation on the ground floor.

Nursing of the chronic sick is perhaps the least attractive of all nursing. There is little reason why staff should be attracted to chronic work while shortage exists elsewhere. Many chronic hospitals have to rely ever encreasingly on their ward orderlies.

As regards voluntary help, the Red Cross Library workers are greatly appreciated. Concert parties visiting the wards of immobile patients are very popular. Film shows are also practicable and welcomed.

Concerning rehabilitation, patients without gross lesions can, with help and encouragement, be prevented from becoming bedridden, and their mental faculties can be stimulated by talking, reading, radio, and occupational diversions. The provision of convalescent and rehabilitation accommodation is a necessity for each acute unit, medical or surgical.

Occupational and physiotherapy departments, community social centers, houses, flats, and hostels for staff would all be required, besides the hospital and hostel for patients. Such a scheme illustrates the extent of the needs, if chronic illness is to be reduced to a minimum.

Carcinoma of the Prostate Gland. Report of a Patient treated with Orchiectomy and Estrogens.

MURRAY D. SHEPP, GUSTAV J. BECK, and IRVING BAYER, *The Am. J. of Med.* 2. No. 1:112-120 (Jan.) 1947. 1947.

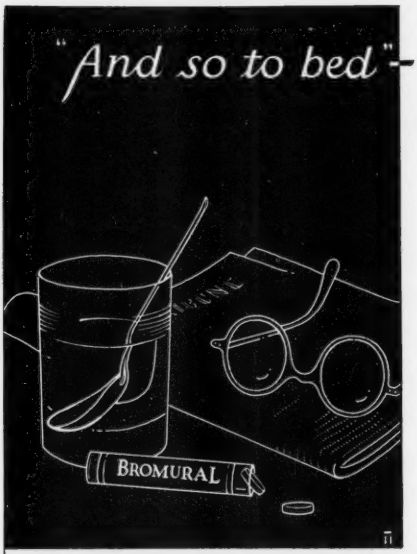
A case of carcinoma of the prostate gland with metastases to the bones in a patient aged 70 is presented because of the opportunity to study over a prolonged period of time the correlation of clinical course, laboratory findings and x-ray with orchiectomy and administration of estrogens.

Orchiectomy proved to be an effective palliative procedure. Following it, there was cessation of bone pain, improvement in appetite and increased sense of well-being. The prostate became smaller and elevated serum "acid" phosphatase values became normal (from 62.2 to 22.4 G.U. per cent).

Symptoms and x-ray and chemical signs of widespread metastases reappeared, however, after a period of more than three years. Diethylstilbestrol was administered in large doses after the signs of recurrence of metastases appeared. While receiving this drug, the patient was comfortable for several months, before he began a final downhill course.

The serum "acid" phosphatase determination was found to be an accurate and sensitive index to the existence of metastases from prostatic carcinoma.

1 chart; 4 figures, bibliography of 23 references.



Council Accepted

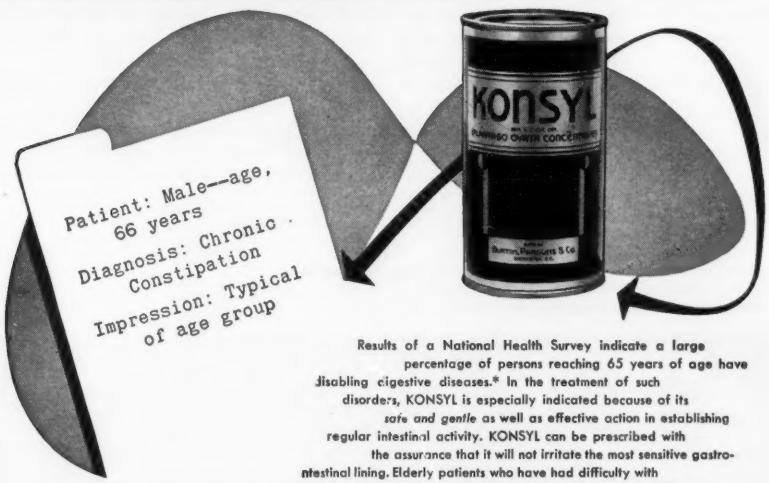
BROMURAL

(alphabromisovalerylcarbamide)

A well tolerated hypnotic, inducing a restful sleep. Two tablets upon retiring or in wakefulness during the early morning hours. Contains no barbiturate.

5 grain Tablets and Powder.

BILHUBER-KNOLL CORP.
ORANGE, - - NEW JERSEY



Results of a National Health Survey indicate a large percentage of persons reaching 65 years of age have disabling digestive diseases.* In the treatment of such disorders, KONSYL is especially indicated because of its *safe and gentle* as well as effective action in establishing regular intestinal activity. KONSYL can be prescribed with the assurance that it will not irritate the most sensitive gastro-intestinal lining. Elderly patients who have had difficulty with bowel-movements for several years will find sharp relief in the easy, well lubricated evacuations KONSYL treatment will afford them. Send for a free professional sample today and test the benefits of KONSYL in your own practice.

*Source—U. S. Public Health Service Survey showed 22.8%

MANUFACTURERS OF
L. A. FORMULA
CONTAINING LACTOSE, DEXTROSE AND PLANTAGO OVATA CONCENTRATE

Burton, Parsons & Co. **1515 U ST., N. W., WASHINGTON 9, D. C.**

Surgical Treatment of Hypertension.

EVERETT G. GRANTHAM. *Kentucky M. J.* 45. No. 1:10-17 (Jan.) 1947.

In the selection of patients for surgery it is important that the surgeon and the internist work in complete cooperation. In addition to the usual blood count and urinalysis, the urea clearance and urine concentration tests are run. An electrocardiogram and seven foot x-ray of the heart are made. Blood chemistry studies including nonprotein nitrogen, urea nitrogen and creatinine are run. The patient is subjected to a sodium amytal sleep test, the cold pressor test and, if necessary, a continuous caudal anesthesia study is made.

Any evidence of congestive heart failure contraindicates surgery, as does impaired kidney function to the point of elevating the NPN or reduction in the intravenous PSP elimination below 15 per cent in the first 15 minutes. Male patients with a resting diastolic level of over 140 are not safe, unless they have had no cerebral vascular accidents or episodes of encephalopathy. Another contraindication is the history of a vascular accident, even one in which the patient has made a good recovery. In general, women are doing better than men.

The combined lumbodorsal sympathectomy is done in two stages. A period of ten days to two weeks must be allowed between stages; sometimes even one month. The male patient should be warned that if it is necessary to remove the upper two lumbar ganglia bilaterally, he will lose his power to ejaculate. The effects in the immediate postoperative period are severe postural hypotension and frequently annoying neuritis of the lower abdominal wall for a period of several weeks or a few months. Elastic stockings and a strong elastic girdle are provided for the immediate postoperative period, which are gradually eliminated.

The operation is performed under endotracheal anesthesia. The sympathetic chain is excised from the 8th dorsal through and including the 1st and 2nd lumbar ganglia. The splanchnic is excised from its origin to the iliac ganglia. The patient may be out of bed on the second or third day following the intervention.

There are not any extensive follow-up records on the lumbodorsal splanchnicectomy as yet, because only a few cases were done before the war, and there has not been a long enough follow-up period for those operated on since the war. However, in 16 procedures during the past 6 months, there has been only one poor result. Smithwick reported an operative mortality of 2.2 per cent, deaths within one year 2 per cent and after one year 3.6 per cent.

Bibliography of 8 references.

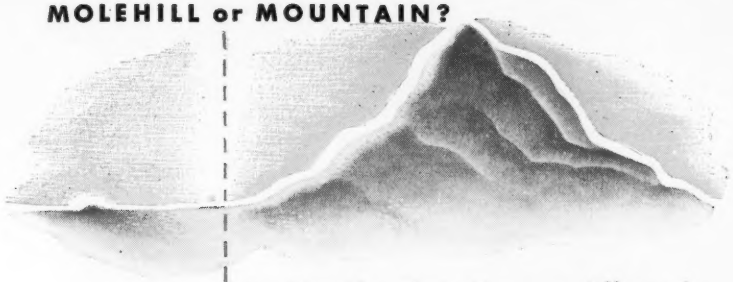
BURNHAM SOLUBLE IODINE

Well-tolerated, active iodine. As alterative prescribe 15-20 drops t.i.d., well diluted, 15 minutes before meals.

A sample is convincing.

Burnham Soluble Iodine Co., Auburndale 66, Boston, Mass.

MOLEHILL or MOUNTAIN?



In Constipation—True or Alleged It's MUCILOSE

When the patient who declares himself constipated has made a mountainous problem of over-purgation from a molehill of underlying cause, Mucilose—bland, lubricating bulk—is a valuable adjunct in correcting both the self-imposed laxative habit and the primary intestinal dysfunction.

Ample intestinal bulk is assured by placing the patient on Mucilose—pure, concentrated hemicellulose from psyllium. More efficient... Mucilose absorbs *50 times* its weight of water to form a bland colloidal gel—lubricates the intestinal contents and gently stimulates peristalsis.

For physiologic re-education . . . for more nearly normal evacuation and a regular "habit-time"—*it's Mucilose.*

GREATER BULK from SMALLER DOSE at LOWER COST

Mucilose

IN SPASTIC AND ATONIC CONSTIPATION

Highly purified hemicellulose concentrate, derived from *Plantago loeflingii* . . . available as flakes or granules in 4 oz. bottles and 16 oz. containers.

A trial supply of Mucilose will be sent to you upon request.

Frederick Stearns & Company
Division
DETROIT 31, MICHIGAN

NEW YORK • KANSAS CITY • SAN FRANCISCO • ATLANTA • WINDSOR, ONTARIO
SYDNEY, AUSTRALIA • AUCKLAND, NEW ZEALAND

Trade-Mark *Mucilose* Reg. U. S. Pat. Off.

"Maintain the best possible nutritional status in the diseased and injured..."

This palatable, nutritious drink contains 1/3 of the protein, all the essential vitamins, all the essential minerals, and 1/10 of the calories, recommended for daily intake by the National Research Council

Gerilac's wealth of valuable milk proteins... its milk carbohydrate, lactose ... its ample fortification with all essential vitamins and minerals... its low fat content... its palatability and easy digestibility—all suggest its routine use to *assure* well-rounded nutrition in convalescence, in pregnancy and lactation, in pre- and postoperative conditions, in restricted diets, as well as in pediatric and geriatric cases.

Gerilac has a pleasant, bland taste as a beverage, with and without the addition of flavors, and may also be readily used in cooking and baking.

Write for Professional Literature and "Tasty Recipes" booklet.

BORDEN'S PRESCRIPTION PRODUCTS DIVISION
350 MADISON AVENUE, NEW YORK 17, N. Y.

So advises the National Research Council's Committee on Convalescence and Rehabilitation (War Med. 6:1, 1944).

Gerilac

A Dietary Supplement for Convalescents and the Aged. GERILAC *contains spray-dried whole milk and skim milk, and is fortified with vitamins A and D, B-Complex, C, together with niacinamide, mono-sodium phosphate and iron citrate. Available in 1-lb. tins at all pharmacies.*